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News

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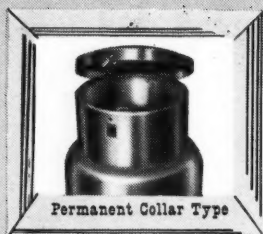
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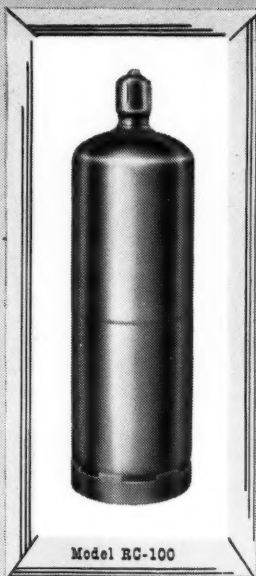


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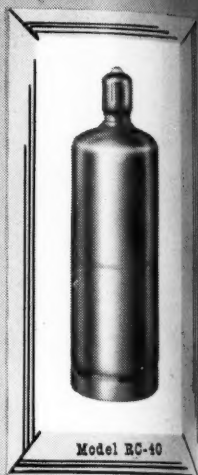
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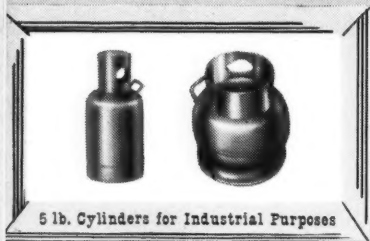
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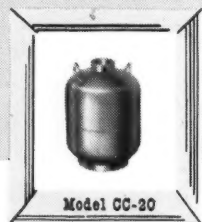
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Model RC-40



5 lb. Cylinders for Industrial Purposes



Model CC-20



Gas Sample "Bomb"



Removable Hood Type

PORTRAITS of a Respected Family

... designed to handle your L-P Gas requirements

A famous family, this line of Hackney L-P Gas Cylinders! Yes, since the origin of the industry, they have been known and respected by L-P Gas producers. They have always found this complete line dependable and economical . . . from the small 5 lb. propane industrial type cylinders to the big fellows containing 420 lb. propane.

Diversified, too! They have been furnished

with various types and combinations of openings, and with removable type of valve protection cap, permanently installed collar and removable hood. Preference, of course! And this preference for Hackney Cylinders has constantly grown . . . a tribute to Pressed Steel Tank Company's more than 40 years' experience in designing and manufacturing containers for compressed gases.



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CONTAINERS FOR GASES, LIQUIDS AND SOLID

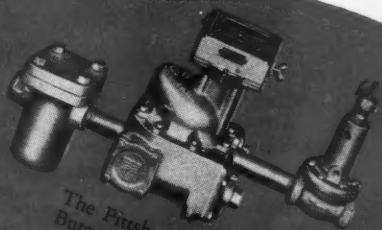
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LIQUID BUTANE-PROPANE METERS



Speed and Protect TRUCK DELIVERIES

Pittsburgh LPG Metering Units efficiently measure butane, propane or butane-propane mixtures. They speed handling, provide accurate records for business operation, and protect against losses from leakage or theft. They build good will by assuring the customer of correct measure. An economical unit to buy and install. Pittsburgh Liquid Butane-Propane Meters can be counted upon to pay for themselves in savings.



The Pittsburgh Piston Type Liquid Butane-Propane Metering Unit consists of a positive displacement meter, a protecting strainer, and a differential valve. The differential valve assures that liquid only will enter the meter and thus guards against false readings.

PITTSBURGH EQUITABLE METER DIVISION

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PITTSBURGH 8, PA.



BEST

LP-GAS DOES IT BETTER





BUTANE-PROPANE News



Reg. U.S. Pat. Off.

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LETTERS

Have you service or operating problems? Submit them to us and our technical department will endeavor to help you.—Ed.

Gentlemen:

Could you advise us as to where we might secure some information on the use of LP-Gas for the curing of tobacco—if this has been tried out, and what type of burners, etc., are used, and if we can compete with oil burner units.

We are in the flue cured tobacco area and if practical to use LP-Gas it would give an off-season gas load.

W. C. N.

South Carolina

I am sorry to say that we have no information on tobacco curing.

We see no reason why LP-Gas cannot be used if it is possible to use wood or kerosene. It is quite possible, however, that in order to obtain the best efficiency at prices interesting to you, it would pay to design a unit especially for operation on LP-Gas.

Can any of our readers supply information on curing tobacco with butane or propane?—Ed.

Gentlemen:

In my butane business I find that I am short over 6,000 gals. over a period of about six months. I attribute most of this shortage to short measure from transport.

In the first place, negligence on the part of transport operator in reading gages, and in the second place, I think I pay for the vapor in bulk storage tank that is liquefied in the process of filling. For instance, when 4,000 gals. of liquid are added to a tank, or rather when the liquid content of a tank is increased by 4,000 gals., 4,000 gals. of vapor is liquefied.

The question I would like to have

answered is how many gallons of butane (liquid) does this vapor make at a temperature of 75° with a pressure in the storage at 60 lbs.?

Another question I would like to have answered is: Does the pressure of a gas at a certain temperature determine its boiling point?

C. M.

Texas

The usual method of unloading transport trucks is to use a vapor return line. After the truck is empty of liquid it will contain a definite amount of gas.

Assuming a 4000-gallon delivery of butane at 75°F., the water capacity of the truck would be approximately 4400 gallon and the amount of vapor left in the carrier will be equivalent to approximately 33 gallons.

The boiling point of LP-Gas varies with the pressure. Tables of boiling points and temperatures of butane and propane can be found in the "Handbook Butane-Propane Gases," which we publish.—Ed.

Gentlemen:

Could you give me information as to where I may buy gas lamps for farm lighting using butane. I need several for the house and one for outside.

E.B.B.

California

The General Gas Light Co., Kalamazoo, Mich., manufactures gas lamps and I am sure that you will be able to supply your need through that firm.—Ed.

Gentlemen:

We are in need of some scales or tables which give a comparison of gas with other heating fuels.

Also we need information on how to figure the size and type heating unit to use in different type buildings and homes.

We are confronted with this prob-

lem daily and are unprepared to give adequate advise. Any information you may have on this will be greatly appreciated.

N. G. D.

Tennessee

I am enclosing a table of contents of "The Bottled Gas Manual" which devotes a great deal of space to these subjects. In separate chapter, it compares liquefied petroleum gas with electricity, oil, coal and wood.

I am also enclosing some tear sheets that have appeared in BUTANE-PROPANE News which will help you figure heating losses.—Ed.

Gentlemen:

We have a customer who desires a timer device to install in the gas line to a three-burner hot-plate. He wants the timer to have a shut-off valve so he can set it for any desired interval of time and when the time has elapsed the gas will shut off.

The timer would have to allow sufficient 570 Btu butane-air gas to operate all three burners.

L. C. B.

Missouri

The Lux Clock Co., of Waterbury, Conn. makes such a control, I am informed.

The Grayson Heat Control, Ltd., Lynwood, Calif., makes an automatic cooking clock for gas cooking ranges only and it would not be applicable to a three-burner hot plate.—Ed.

Gentlemen:

Do you have information relative to the cities and towns in the United States and Canada that are supplied with liquid petroleum gas service? We desire to obtain a list of such towns and whether the gas supplied is butane, propane or a gas-air mixture.

E. W. G.

Illinois

We published last spring a list of liquefied petroleum gas bulk plants in the United States. This included central town plants which serve liquefied petroleum gas through mains.

There are approximately 250 town plants which serve butane or propane through underground mains.—Ed.

Gentlemen:

We would appreciate it very much if you would send us the names of concerns who handle or manufacture gas bakery equipment. There is a new bakery going up in town within the area that we expect to service from a central LP-Gas plant. Naturally we would like very much to see gas equipment used in this bakery, but so far we have nothing to offer them.

J. W. D.

South Carolina

The principal manufacturer of commercial baking equipment selling into the liquefied petroleum gas industry is the G. S. Blodgett Company, Inc., 53 Maple Street, Burlington, Vermont. I am sure you can get valuable help from them by presenting your problem.—Ed.

Gentlemen:

In your April issue you mention a newspaper feature, "Fixing Up the Home," being offered to daily newspapers, etc. How and where can I get additional information concerning this service?

W. H.

Indiana

I am glad to give you the name of the Lawrence H. Selz Organization, 22 North La Salle St., Chicago 1, publicity agents for the Liquefied Petroleum Gas Association.

The Selz Organization prepares much material for newspapers and radio stations and that firm is the one which is putting out the feature entitled "Fixing Up the Home."—Ed.

Gentlemen:

Will appreciate your advising us of any listing you have of manufacturers of propane and butane vaporizing equipment for industrial purposes.

W.F.P.

Kentucky

Names of companies making vaporizing equipment are: American Liquid Gas Corp., 1105 Santa Fe Ave., Los Angeles; Gas-Air Corp., 1072 Bryant St., San Francisco; Oxford Co., Oxford, Pa.; Pacific Gas Corp., Rockefeller Center, New York City.—Ed.

COMMENT

THE diesel engine has long been considered unbeatable for heavy duty work — economical and long-lived.

No more. Now, they convert the diesel engine to burn B-P Gas and treble or quadruple the periods between overhauls, increase efficiency and break even on fuel costs.

It just seems as though there is no fuel that can compare favorably with butane and propane for meeting the heating and power jobs to be done in this old world, and when a salesman knows this he has a big lead on competition.

One marketer stated emphatically recently that not only was he refusing to sell to accounts which had badly balanced loads, but he could afford to give his all-year-round customers a 2-cents-per-gallon better price than those who buy spasmodically, seasonally speaking.

In some industries, dealers have to search for new avenues of expansion. Not so with distributors of liquefied petroleum gas.

Applications exist on every hand and the best of it is that many are of the character which will enable the dealers to establish a better balance between their winter and summer loads.

Turn to Page 125 and you will see what is being done with butane burning engines in cotton ginning.

The attendance at the Colorado Springs meeting of the LPGA and the interest shown in the exhibits and

talks indicate how anxious dealers are to gain helpful information. An industry association is the right place for members to go for mutual aid.

State groups are becoming increasingly important. They are setting high safety and business standards which their memberships are striving to attain.

Again gas is close to the bottom of causes of fire in this country, according to the NBFU report. And again electricity is close to the top. That's one race in which we want to run last.

Liquefied petroleum gases were made exceptions to the rule when embargoes were placed on rail shipments prior to the May 24 strike.

Railroads were directed to move live stock and perishables first. Next: Petroleum, gasoline, B-P Gases, fuel oil, kerosene and lubricating oils.

The war demands for butane and propane made officials conscious of the importance of these gases to human beings and to industry.

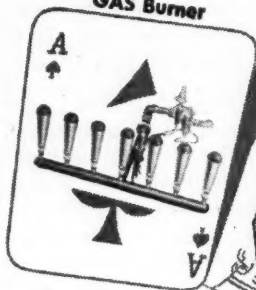
"The transition from a seller's market to a buyer's market will be quick," stated John K. Knighton, Servel Inc., to conventionites in Colorado Springs. And it may come yet this year or early in '47, when dealers may have more appliances and equipment than prospects, he added.

Which means, dealers should always be seeking new accounts and new kinds of accounts against the day of harder competition.

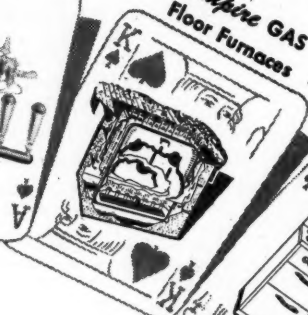
By Ed.

A "Royal" Winning Line for You!

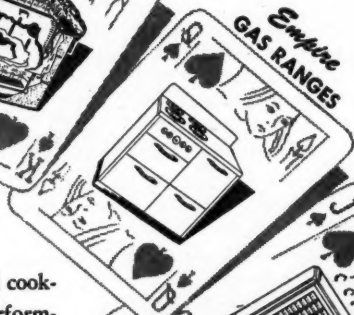
*Empire's NEW
GAS Burner*



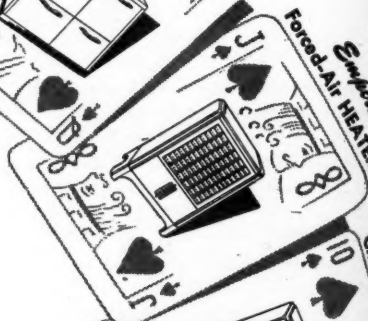
*Empire GAS
Floor Furnaces*



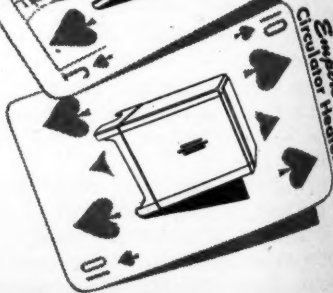
*Empire
GAS RANGES*



*Empire
Forced-Air HEATERS*



*Empire
Circulator HEATERS*



This line of gas heating and cooking appliances is tops in performance, appearance and sales.

All heating appliances manufactured by Empire are equipped with the new perfectly performing, non-clogging, service-free Empire gas burner.

Make an appointment now for one of Empire's representatives to visit you and explain in more detail this exceptional line.



Empire Stove Company

BELLEVILLE, ILLINOIS



MANUFACTURERS OF GAS HEATING AND COOKING APPLIANCES



Beyond the Mains

By ELLIOTT TAYLOR

An Unwise Aspiration

It is a well-known fact that when the non-legal mind goes to work on a problem involving a point of law, the amateur Blackstone generally winds up by losing the case, and as often as not gets himself and his client in the toils for contempt of court. Nothing deters us, however, when a principle is involved.

Now comes the attempt of the Arizona Corporation Commission to declare the bottled gas industry of that healthful and attractive state a public utility and, as such, subject to rate and other regulations the same as water, gas, electric utility companies.

Four Arizona distributors have filed suit in the courts for a declaratory judgment excluding them from the classification of utilities and prohibiting the commission from taking jurisdiction over the industry.

We cannot believe that the court, after due deliberation, will deem the liquefied petroleum gas business a public utility, since the very elements upon which the principle of utility regula-

tion is founded are missing from the case.

Basically, public utilities are required to submit to regulation in return for the advantages inherent in the permission accorded them to operate either complete or quasi-monopolies in the type of service rendered. Here regulation is necessary in the public interest since, from a practical standpoint, once the utility is established it becomes virtually impossible for competition in the form of a duplicate service to intrude on the territory.

There are, then, mutual obligations between the body politic, as represented by its regulatory body, and the regulated utility that must be taken into consideration, and which cannot be observed in the sale and distribution of bottled gas.

One of the most important of these is the question of franchise. If a regulated utility is to operate in a territory, it must have a franchise for that territory which in effect excludes other and unfranchised opera-

tion from an invasion of the area served.

Were the Arizona commission, or any other commission, to attempt to sit in judgment on all of the conflicting claims for exclusive rights to serve — claims backed in every instance by the evidence of service already being rendered within those areas by two or more competing distributors—it would have on its hands an unending series of insoluble service area problems.

In the same city, on the same street, even next door, neighbors are often found to be buying bottled gas from two different firms. Even if the Commission were to disregard the rights of one or another supplier to continue to hold the services that he had established, would it be able legally to invade the rights of the private purchaser to continue to buy from whom he pleases on a purely competitive market?

Public utilities are also required, in most instances, to continue to render service, once it has been established, until the right to discontinue such service has been granted by the regulatory body having jurisdiction. One can easily foresee innumerable situations in which commission definitions of franchise territories would leave orphan areas which no one could profitably serve, and so delimited as to make present service in the hope of future expansion impossible.

Under such circumstances we

can see no choice for the commission but to order one operator to continue service even at a net loss, until such time as bankruptcy eliminated him from business.

Obviously the Arizona commission has turned its eager eyes on the sizable volume of gas being handled by a very few major operators, and has ignored completely the problems that would arise if it attempted to apply the public utility regulation formula to all of the dealers and distributors that comprise the B-P Gas industry.

If it has not already done so, we believe the Arizona Corporation Commission would be well advised if it were to relinquish as gracefully as possible its aspirations to a jurisdiction that could result only in inequity and confusion to the bottled gas business, and would be of great disservice to the liquefied gas consumers of the state.

Anything Beats Nothing

The chief argument that we hear against continuing the \$35,000 publicity campaign of the butane-propane industry, now in its third year under the auspices of the Liquefied Petroleum Gas Association, is that the money could be better spent for "something else"; but nobody ever seems to come up with any definition of what this better something else might be.

Liquefied gas is big time. It is big time to the electrical in-

industry which looks on it as its most formidable contender for the rural power and fuel load. It is big time to the two million families who are lucky enough to be enjoying gas service in areas where they might otherwise have to put up with kerosene, electricity or coal. It is big time to the hundred and twenty producers who turned out over a billion gallons of liquefied gases in 1945.

And as a consequence it has to be big time to the thousands of distributors and dealers who are responsible for the resale of that portion of the production going into domestic, commercial and industrial channels.

Even if the association's publicity campaign were only part of a larger and more comprehensive program embracing publicity, advertising and industry promotion, the amount expended would still be small enough. But when we stop to consider that this small expenditure adds up to all that is being done on a national scale in these three related fields, it dims out almost into invisibility.

With approximately 20,000,000 customers, the gas utility industry is spending in one year about \$1,100,000 on advertising, publicity and sales promotion through its American Gas Association. On a per customer basis this amounts to nearly four times the amount that is being spent by the liquefied petroleum gas industry for similar activities through the LPGA. And yet the potential possibilities of

new expansion in propane and butane service are infinitely greater in proportion than are those of town-gas companies.

During 1945 national magazine and radio advertising, alone, devoted to electric ranges, refrigerators and kitchens amounted to \$5,924,440 as compared to similar expenditures by gas appliance manufacturers of only \$574,446.

That is a ratio of over ten to one in favor of the kilowatt hours, and the first quarter of 1946 showed no improvement in the gas industry's position. For during those three months the electrical total was \$1,622,137 as compared to \$126,635 for gas. Still less than one dollar spent telling about gas appliances, for every ten devoted to extolling the electrical way of life.

We make no brief for any particular method of handling industry publicity, although in all fairness we believe it should be recognized that the present agency through which it is being distributed has given a good accounting of the money that has been made available.

But in this fast race, right when liquefied gas stands to make the biggest killing in its history, or in the history of any fuel, we are convinced that no promotional effort, however small, should be abandoned or even temporarily suspended unless something infinitely bigger and a whale of a lot better has first been launched to take its place.

ONLY A "DRIBBLE" (in relation to the demand)



... but we're actually shipping again!

Here's picture-proof that PAYNE Furnaces *are* being shipped! If yours haven't arrived, or if you've received only a fraction of your order, it is because we are being fair and impartial in allocating production. ★ The factory is humming; more materials are on the way. Soon we hope to send a steady flow of *all* models to our distributors and dealers everywhere.

—E. L. Payne, *President*

PAYNE FURNACE COMPANY
(One of the DRESSER Industries)
BEVERLY HILLS, CALIFORNIA

PAYNE ZONE-CONDITIONING
Unit heating, geared to modern living. Write for special booklet, **FREE**.

PAYNEHEAT
OVER 30 YEARS OF LEADERSHIP



Industry's Future is Bright, Dealers Hear at LPGA Meeting

By ELLIOTT TAYLOR

NO dress rehearsal of better days to come but a full-scale enthusiastic demonstration of its members' conviction that the post-war expansion of the butane-propane industry is well under way was the keynote of the Liquefied Petroleum Gas Association's annual meeting and industry exhibition held in Colorado Springs, May 27-29.

The railroad strike and the resulting transportation snarl notwithstanding, 370 operators, dealers, distributors and manufacturers registered for the three days of conferences at the Antlers hotel, and the municipal auditorium was comfortably crowded at times as new and improved gas appliances and equipment were demonstrated and displayed during the morning hours of each day.

In accordance with the manner of balloting of the Association, Charles O. Russell, of Des Moines, was elected president for the ensuing year, succeeding Ernest Fanning, of Phoenix. Other new officers included: L. V. Rothrock, Boise, Idaho, first vice president and Wendell B. Wight, Albany, Georgia, second vice president.

In addition to the national officers, other sectional chairmen, who automatically become directors, were confirmed by the national board of directors. Tallent H. Ransome, Emeryville, Calif.; Foster

N. Mabee, Denver, Colo., and Walter A. Naumer, of New York City, are in this latter category.

Speakers who addressed themselves to various aspects of selling and sales promotion problems were in general agreement that in spite of the present day seller's market the time may not be far in the future when buyers will again assume control and industry in general may be actively in search of new customers and new markets.

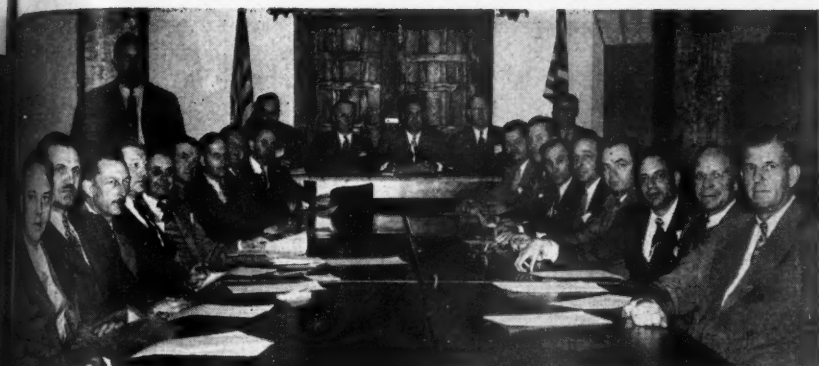
Carl Sorby, perennial chairman of the publicity committee, made this point in his introduction of Budd Mulloy, who reported on the general publicity advertising that had been handled under his direction for the past two years. Approximately \$35,000 a year has been spent on this activity and its cumulative effect was shown in Mr. Mulloy's report on farm publications, newspapers and radio programs that have made widespread general use of the prepared material that has been supplied them.

John K. Knighton, speaking on "Selling in a Seller's Market," warned that the transition from a seller's to a buyer's market would in many instances be extremely abrupt, with local market saturations in various items making their



Above: H. Emerson Thomas; Ernest Fannin, outgoing president; E. Carl Sorby and John K. Knighton listen to Charles M. Russell as he takes over the presidency of the Liquefied Petroleum Gas Association at Colorado Springs, May 27-29.

Below: Newly elected officers of the Liquefied Petroleum Gas Association—(front row) F. R. Fetherston, vice president, technical division; L. V. Rothrock, first vice president; Chas. O. Russell, president; Wendell B. Wight, second vice president. Rear—Arthur Kreutzer, LPGA attorney; Howard D. White, executive vice president.



Around table clockwise: M. L. Trotter, Carolina Butane Gas Co., Columbia, S. C.; James D. Moyle, Wasatch Oil Refining Co., Salt Lake City; Harold W. Wickstrom, Las Vegas Gas Co.; Erwin C. Brandt, Standard Gas Equipment Corp., Baltimore; Lee H. Barker, City Gas Service, Inc., Wisconsin Rapids, Wis.; Joseph Crowden, Indiana Bottled Gas Co., Goodland, Ind.; Willard M. Ware, Gas-Oil Products, Inc., of Florida, Coral Gables; Lon D. Turner, Eaton Metal Products Co., Denver; H. Emerson Thomas; S. G. Darling, Darlingas, Inc., Pratt, Kan.; George W. Ryan, Ryan Rural Gas, Inc., Kansas City, Mo.; George Steele, George Steel & Co., Butte, Mont.; Field Foster, Lone Star Gas Co., Dallas; Wendell B. Wight, Consumers Gas Co., of Georgia, Albany; Hermann Paris, Georgia Butane Gas Co., Sandersville; Foster N. Mabey, Colorado Natural Gas & Fuel Co., Denver. Across back are Arthur Kreutzer; L. V. Rothrock, Liquid Gas & Appliance Co., Twin Falls, Idaho; President Chas. Russell; Howard White; Frank Fetherston. Jack W. Crane, Gas Heat, Inc., Salem, Ore., is standing rear left.

Lower: B-P Gas men and their wives at one of the convention luncheons.



ROSS THOMAS



BUDD MULLOY

appearance before the national situation has completely altered. He posed the question, "Are you building for the future or just coming in for the kill?" reminding his auditors that every act and activity that they engage in now must be regarded as an investment in the future.

A vastly expanded water heater load (see Page 44) was predicted by Elmer Cone, of Ruud Manufacturing Co., as a result of some modern trends which he enumerated.

He emphasized that water heating equipment should be sized for the job it is supposed to do to insure that the supply and temperatures will be adequate for all demands.

Carl Sorby, Geo. D. Roper Corp., urging that the common objective of the industry should be selling and installing higher quality cooking ranges, suggested that this could best be accomplished by placing selling emphasis on the results of gas cooking rather than in the mechanics and gadgetries of appliances.

Admonishing the industry that

it need not entertain undue fear of electrical competition, he said the features that women want in gas ranges are already available in the product that is being made and sold today.

Two companion papers on safety and insurance by H. Emerson Thomas and Clarence Cooper were read by Mr. Thomas, who said, "Results of our safety program industry-wise and company-wise affect our pocket-book because of its effect on insurance premiums."

Some of the general prejudices on the part of insurance companies against writing liability insurance for distributors, dealers and sellers of gas appliances are based on (1) Unprofitable loss experience; (2) the high potential risk involved in losses, and (3) the inexperience and carelessness on the part of many operators.

As an insurance expert, Mr. Cooper recommended that the liquefied gas industry attempt to center all of its insurance problems in a single sub-committee "if the industry is sufficiently interested to obtain for its members in general a ready insurance market."

He suggested that this might best be accomplished through the organization of a mutual insurance company to write liquefied gas insurance. Such a company would accept the insurance only of those distributors who could qualify through adherence to rigid safety standards.

A paper prepared by George Oberfell and Ross Thomas, Phillips Petroleum Co., and read by the latter, dealt with the growth of the industry, the sources of supply for

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butane and propane, and the prob-
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gases in view of new demands and
new non-fuel uses to which they are
being put.

Urging that the industry give
serious consideration to smoothing
out the present seasonal load varia-
tions, he pointed out that failure to
move butane and propane as they
are produced must inevitably result
in increased cost, and "meeting the
industry's peak demands at present
price levels is becoming increasing-
ly more difficult for producers,
transporters and marketers."

As means whereby this peak sit-
uation may be improved, Mr.
Thomas suggested (1) Increased
domestic consumer's storage; (2)
increased distributor's bulk plant
and industrial plant storage, and
(3) active sales promotion of sum-
mer uses for gas.

Butane Supply Is Ample Now

There is at present ample sup-
ply of butane and propane for the
requirements of motor fuel, avia-
tion gasoline, synthetic rubber and
chemical industries over and above
the requirements of the liquefied
petroleum gas industry. "In fact,"
said Mr. Thomas, "the potential
supply far exceeds present de-
mands." The increased cost of pro-
duction, however, will "probably
increase the cost of propane and
certainly increase the cost of bu-
tane to the B-P Gas industry."

Specific and detailed recommen-
dations for building a summer gas
load through the sale of fuel to
ranches for use in irrigation pump
engines was given by Charles Den-



Charles M. Denton tells delegates how to
build summer load with irrigation
pumping.

ton, of the Pacific Tanks Co., Los
Angeles.* Irrigation brings a par-
ticularly desirable industrial load
factor since practically all of the
use for that purpose occurs between
the months of May and November.

He stressed the necessity for
well-designed installations, ade-
quate in capacity and demanding
a minimum of supervision and at-
tendance on the part of the opera-
tors. This, in Mr. Denton's opinion,
requires that any dealer embark-
ing on a program of developing
gas engine sales should have a

* See series of articles starting in May
BUTANE-PROPANE News entitled, "Pump-
ing Water with B-P Gas."



K. R. D. Wolfe discussed equipment—present and future.

standardized installation procedure.

In the opinion of Kenneth R. D. Wolfe, of the Fisher Governor Co., who spoke on the maintenance of equipment, "the maintenance and servicing of liquefied gas equipment is a subject which has been grazed over by many operators as one which can be put off and considered later . . . this disregard on the part of many companies has been and will continue to be a serious black mark on the good will and confidence of millions of customers, present and potential, who depend solely on B-P Gas for cooking, heating, refrigeration and hot water."

He recommended that the liquefied gas operators profit from the experience of the public utility gas

companies in servicing and maintaining gas regulators. It is common practice on the part of public utilities to have certain definite service periods, the length of which depends on the various factors, such as the type of gas served and the climatic operating conditions. Where such a program is adhered to, regulators and meters are removed from the customer's service and replaced with new or reconditioned ones on regular schedule.

The general recommendations as regards regulators also apply to meters, relief valves and similar operating equipment.

The marketers' open forum, held on the first afternoon, was conducted by Hermann Paris, Sandersville, Ga., and E. Martin Anderson, Portland, Maine

At the conclusion of the three-day meeting the newly organized board of directors of the Liquefied Petroleum Gas Association met for the purpose of appointing chairmen of the various committees.

Chairmen thus appointed were: Finance—Harry K. Strickler, Erie, Pa.; Legislation—Kenneth W. Rugh, Bartlesville, Okla.; Safety—E. L. Mills, Chicago; Technical and Standards—Walter Hoagland, New York; Appliance Specifications—Mercer Farrar, New York; Insurance—H. E. Thomas, Westfield, N. J.; Membership—Ernest Fannin, Phoenix, Ariz.; Publicity—E. Carl Sorby, Rockford, Ill.; Specifications—G. L. Brennan, Tulsa, Okla.; Transportation—George W. Bach, Kansas City, Mo.; Constitution and By-Laws—L. Abramson, Jr., New Orleans; Rules and Procedure—Frank Boice, New York City.

Small Engine, Replacing Electric Motor Proves Safe in Liquid Transfer

By CHARLES M. CORKEN

Corken's, Oklahoma City

WITH all the tremendous power in the war-time bombers, there was still a need for a small, compact, easy-starting, and safe gasoline engine. And in addition to the surging power of sleek submarines, an auxiliary power unit of unfailing dependability was necessary.



C. M. CORKEN

With the war over and the LP-Gas industry again on the move, there quickly developed a need for power—power to drive pumps to move the liquid from the tank cars, transports and storage tanks, and the electric motor industry was too far behind to fill the needs, so, from the empty skies and the peaceful oceans it was possible to bring together those little bundles of energy and put them to work in the newest and the fastest growing and the most interesting of industries—LP-Gas.

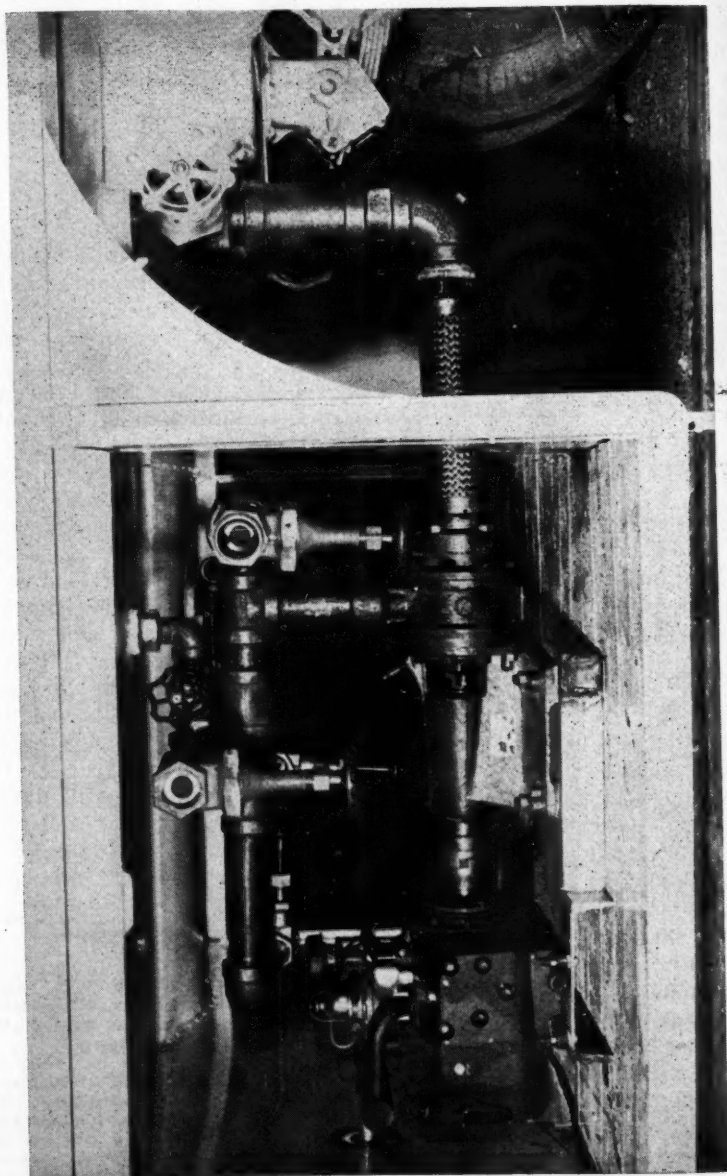
This power plant is a small 2-cylinder opposed, air-cooled, 4-cylinder engine with sensitive mechanical governor, down-draft carburetor, shielded ignition system and

oil bath air filter, which is also a back-fire arrester. It is 19 in. long and 18 in. wide. It is equipped for either gasoline fuel or butane-propane. This engine develops an easy 4 horsepower and 1750 RPM with surprisingly small amount of vibration.

To match such a fine power plant requires a pump which offers practically no resistance to starting and such a unit was the turbine type. This type pump puts no load on the engine until a speed of better than 1000 RPM is reached, and by that time the engine has the bit in its mouth and is off. In the very early spring of 1945 test units went into service on a bulk plant serving four 1000-gallon delivery trucks. That little pumping outfit is still starting several times every day and filling those trucks in 20 to 24 minutes. Its owner has one other bulk plant

CHARLES M. CORKEN is a painstaking, scientific workman, and a specialist on pumps, especially those used in the liquefied petroleum gas industry.

With the war over, he was ready to market his newly developed turbine pump—but there were no explosion-proof, electric motors to be had. So he built an engine for power that has proven safe and dependable. It burns either LP-Gas or gasoline. Thus, dealers may proceed with their fuel transfers, no motors notwithstanding. This article tells how.—Editor.



An engine-driven pumping unit mounted on a large transport.

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equipped with an engine drive pump on 4000 gallon twin tank equipment.

Safety was the first goal and, since the underwriters will not even look at such engines, it was necessary to do our own testing. This has consisted of periodically operating an engine at full load to get it as hot as possible and then turning a stream of butane or propane across it. No fire has yet resulted. However, this engine can be operated with the same type care as any other piece of equipment around a bulk plant and it certainly offers less possibility of danger than the several points of potential sparking which are always present with truck engines and starters.

Two capacity sizes of pumps have been used on the engine. In the bulk station pump, the rating is 50 GPM at 24 lbs. differential pressure with a top differential availability of 60 lbs. For transport unloading and other low pressure transfer work the pump has a 75 GPM rating with a top differential of around 45 lbs.

Bulk Plants Kept Operating

Another interesting and valuable feature of such a unit is that the 50 GPM pump can be powered with a 3-horsepower, 1800 RPM motor if the owner should ever find it advantageous to do so, and the 75 GPM with a 5-horsepower, 1800 RPM motor will then reach a head with 55 lbs. Even the flexible couplings of the 50 GPM outfits will fit on the end of a 3-horsepower motor without change, but for a 5-horsepower motor the coupling needs to be bored to 1 1/8 in. These engine

pumping units are doing daily duty in Oklahoma, Arkansas, Nebraska, Georgia, Mississippi, New Mexico, Iowa, Texas and Old Mexico, which means that bulk plants have been put into profitable operation which otherwise would have had to remain idle for an indefinite time.

Not many war products fitted so perfectly into peacetime industry.

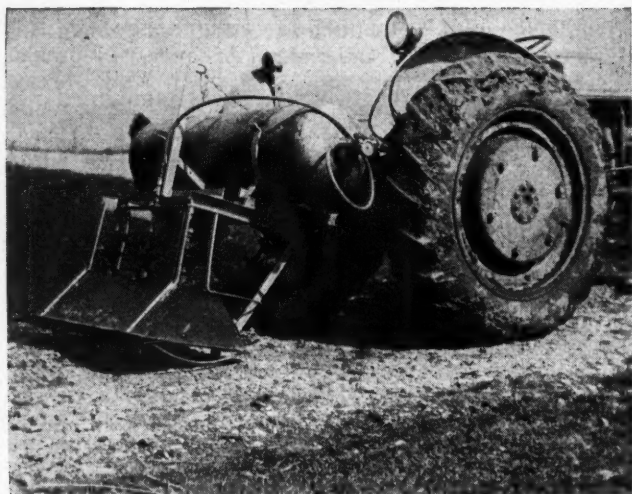
Increased Rail Rates Protested in Florida

Protests against a freight increase on "bottled gas" which, if put into effect, would mean a fuel price increase for some 3,000 families in Pinellas county, Florida, were filed May 2 by Ben Overton, traffic manager of the chamber of commerce of St. Petersburg.

He is sending his protest to the Interstate Commerce Commission asking that a temporary suspension of orders for a rate increase on the shipment of "liquid petroleum" to southern Florida be granted pending investigation by the ICC.

Increased freight rates on such gases had been ordered, with increased tariffs advanced by as much as 10 to 12 cents a hundred pounds. If put into effect it would mean an eventual increase of nearly a half-cent a gallon to users in that area, Mr. Overton claimed.

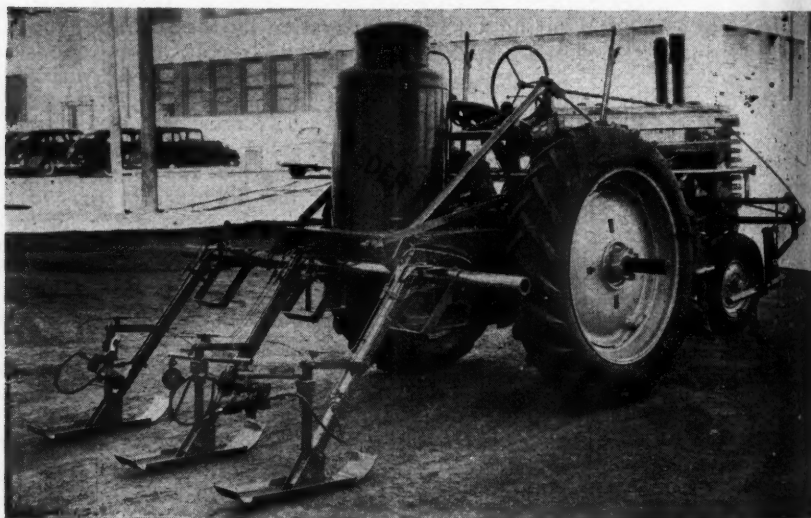
It is contention of Mr. Overton in his declarations to the ICC that Peninsular Florida is being discriminated against as opposed to the rest of the country. Some time ago a change in rating as to weight per gallon was ordered. This resulted in freight earnings per car being lowered and the raise in rates, scheduled to go into effect May 11, would have restored the previous higher price and cost of shipping per car.



▲
At left: Flame cultivation attachment on propane-burning tractor used by J. Richard Verkamp, Verkamp Corp., Cincinnati, Ohio, in his Midwest cornfield.
▼

Flame Weeders for Corn

A 2-row burner attachment on a modern tractor for flame weeding of row crops, made by Servis Equipment Co., Dallas, Texas.



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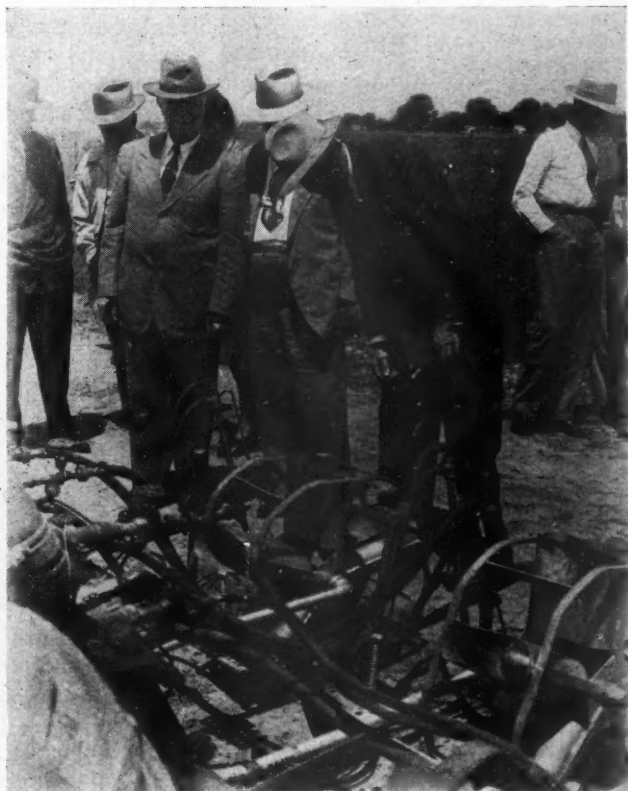
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THE new flame cultivator is an invention which substitutes spurts of flame for the old labor of hand hoeing the crop row. The equipment was demonstrated recently for the United States Secretary of Agriculture at the Delta Experiment Station, at Stoneville, Miss.

An invention of Price C. McLemore, World War II veteran and cotton producer of Montgomery, Ala., the flame cultivator has been through a long test period of agricultural experiment stations. It has

been demonstrated that the equipment reduces the cost of cultivating cotton to 50 cents or less per acre, compared with a hand hoeing cost of from \$3 to \$4 per acre.

Two and four row models of the flame cultivator are now in quantity production by the New Holland Machine Co., New Holland, Pa., which has exclusive manufacturing and distribution rights in the United States under the McLemore patents.



Secretary of Agriculture Clinton P. Anderson (bending over machine) and Congressman Wm. W. Wittingham (facing camera), representative from the Delta district, are inspecting the new flame cultivator in use at the Delta Experiment Station, Stoneville, Miss. Photo: Courtesy of New Holland Machine Co., New Holland, Pa.

Tools for the Service Man

AN ADEQUATE tool kit is a very important part of a service man's equipment. It should provide him with the right tools and all the tools he needs in trouble shooting and in making installations.

In a recent issue of "Pyrofacts," company publication of the "Pyrofax" Gas Division of Carbide and Carbon Chemicals Corp., New York City, M. G. Farrar, service manager, presents a list of tools that his men are required to carry and which every service man may well use as a standard of what is most essential. By permission of Mr. Farrar, his article is reprinted here.

—Editor.



M. G. FARRAR

Service Tools and Supplies

The "Pyrofax" Gas Distributor's Installation and Service Department is one of the most important in his organization. The importance of neat and efficient personnel for this department is discussed in Section B, Subject 4 of the Distributor Operation Manual.

All service men should be furnished with proper tools and service equipment in order that their work can be performed with the greatest efficiency and economy.

Service men should also be supplied with instructions, which distributors should obtain from manu-

facturers, on the proper methods of installing, adjusting and servicing ranges, water heaters, refrigerators, and other appliances sold or installed for use with "Pyrofax" gas. Distributors should see that their service men are properly equipped.

"Pyrofax" Gas Tool Kit

Every service man should be supplied with the standard "Pyrofax" gas tool kit. A new tool kit is illustrated in the accompanying photograph and consists of the following items:

- 1—Kennedy CS-16 tool case (size 7" x 7" x 16").
- 6—Midget hack saw blades.
- 1—15/64 in. straight shank drill.
- 1—Dunlap drill gauge (# 1- drill size).
- 1—Starrett drill gauge (#61- drill size).
- 1—Can Schoenberger stop cooking grease.
- 1—Midget hack saw.
- 12—Hoods (for spuds).
- 2—#611-F National Lock Co. keys (for drop door of type "A" cabinet).
- 2—Reese padlock keys (for type "T" and "H" cabinets).
- 6—3/8 in. pipe plugs.
- 1—Starrett #162-B pin vise.
- 1—Case containing 6- #70 reamers.
- 1—Case containing 4- #60 and #50 reamers.
- 25—#80 drill size spuds.

25—#75 drill size spuds.

25—#70 drill size spuds.

1—Tap .274 in. x 36 V thd. (for spuds).

1—Fisher #50 low-pressure test gauge.

1—"Pyrofax" high pressure gas test gauge and adaptor.

1—Weksler oven thermometer.

1—Tube bender (for $\frac{3}{8}$ " nom. cop. tube).

1—#3410 Stevens Spintite wrench. (for spuds).

1—#329 Greenfield tap wrench.

1—1 in. x 1 $\frac{1}{8}$ in. open end wrench (for cylinder leads).

1—Cylinder valve "T" handle wrench.

In addition to the above tools and parts, the following items are also considered essential and should be obtained from regular suppliers and included in each service man's kit, or carried as service truck equipment.

It is suggested that small items, used principally for adjusting and servicing appliances, be carried in a small compact case and that heavier items, used for installation work, be carried in a larger case, or in special compartments on the service truck.



"Pyrofax" gas tool kit.

Suggested Additional Tools

For Installation Work:

Shovel to level ground underneath cabinet.

Spirit level to level cabinet, range, etc.

Carpenter's brace with 9/16", 11/16", 7/8" and 1-1/16" bits and small feeler bit.

3/4" stone drill or chisel about 15" long—also 1" ripping chisel.

Small hand saw.

Medium heavy hammer.

Carpenter's hammer.

12" hack saw, medium fine tooth blade. (If pipe cutter is used, pipe reamer is necessary.)

Pipe vise and oil can filled with good cutting oil.

10" flat bastard file.

6' folding rule.

For General Service and Installation Work:

8", 10" and 14" pipe wrenches.

12" monkey wrench.

10" or 12" open end adjustable wrenches.

Set of open end wrenches—1/4" to 1".

Various size screw drivers.

Combination pliers.

Combination tubing cutter and flaring tool with block for 1/4" to 5/8" O.D. copper tube.

3/8" pipe tap.

Small container of heavy shellac and brush.

Small container of soapy water and brush.

Miscellaneous items such as flash light, penknife, friction tape, wire brush, matches, wiping cloth, etc.

For Servel Refrigerator:

(Should be secured from Servel, Inc., or their distributor).

3/8" x 7/16" box end wrench.

Double-offset screw driver—1/8" 1/4".

16" manometer assembly.

3" spirit level.

Complete set of precision orifice spuds for 2,500 Btu. propane gas.

Supply of line shut-off cocks.

In addition to the above essential items, servicemen also find it convenient to carry the following tools and parts:

#6 x 32 tap for inside of Magic Chef oven pilot tube.

5/16" x 32 tap for Servel burner and by-pass on Magic Chef heater control.

3/16" x 24 die for outside of Magic Chef oven pilot tube.

3/16" x 24 tap for inside of Magic Chef pilot tip.

1/8" button-type pipe die.

Taps and dies for common machine screw and stove bolt threads.

Various replacement pilot tips and orifice spuds—also, various by-pass spuds and inserts for oven heater controls.

Pocket thermometer, 0° to 220° F. such as Tagliabue #516054.

Set of small Allen wrenches.

Long nose and cutting pliers.

Small can of light machine oil.

Small container of mild-abrasive scouring powder.

Small bench vise.

Hand or electric drill with various size drills.

Miscellaneous items such as putty knife, burner port reamer, various small punches and cold chisels, midget hammer, 6" fine mill file, rat-tail file.

It is important to have good quality tools and to keep them in good condition. Saving a few dollars by buying inferior tools, or by not giving the proper care and protection

tools, equipment and supplies, is usually false economy.

Piping or Tubing and Fittings

Specifications as to piping or tubing and fittings which may be used for "Pyrofax" gas lines, are given in Section E, Subject 6 of the Distributor Operation Manual. For maximum efficiency an assortment of elbows, tees, couplings, ground seat unions, nipples, bushings, etc., for $\frac{1}{8}$ " to $\frac{3}{4}$ " pipe; and an assortment of approved flared-type fittings and adaptors for $\frac{1}{4}$ " to $\frac{1}{2}$ " nominal copper tubing, should be carried as installation and service truck equipment, along with a supply of copper tubing. On restaurant jobs, or other installations requiring lines of unusually large size, a list of the materials required should be made up when the job is surveyed, so as to avoid delays while installation work is in progress.

Check-list of replacement equipment and parts which should be carried in suitable compartments on service trucks.

Regulators.

Cylinder leads.

Manifolds.

Automatic changeover devices.

Signal gauges.

Signal gauge leads.

Cylinder valve "T" handle wrenches.

Cylinder lead blanking-off caps.

Cabinet locks and keys.

Mercury.

the bottled gas industry is a public utility and, as such, subject to rate and other regulations by the commission, as are enterprises already recognized as public utilities.

On recommendation of the office of John L. Sullivan, attorney general, the commission indefinitely postponed a scheduled hearing at which dealers in manufactured gas sold in containers to the public for domestic or commercial purposes had been cited to show cause why they should not be adjudged in the category of a public utility.

One of their principal points of concern has involved the question of how, were these dealers declared to be public utilities and issued franchises as such by the commission, would territories be divided among them.

The industry also contends that, if they are in the category of a public utility, the commission might as logically take jurisdiction over ice plants, wood and coal distributors and other types of business rendering similar services to the public.

Tennessee Liquefied Gas, Inc. Opens Office in Dyersburg

Organized under the name of Tennessee Liquefied Gas, Inc., James S. Jones and H. M. Walker have established themselves in Dyersburg, Tenn., to conduct a general butane-propane business.

Sales to cotton ginning plants and operators of flame weeding machines will be stressed because of much need for B-P Gas in those fields and to insure a balance for the winter heating load.

Mr. Jones and Mr. Walker have been employed in the past by the J. & S. Carburetor Co., Dallas, and will have the agency for that company's carburetors in their district.

Courts Will Decide Arizona Dealers' Case

The Arizona Corporation Commission decided May 23 to leave it up to the courts to decide whether or not

B-P Gas Pops Corn For Kiddies

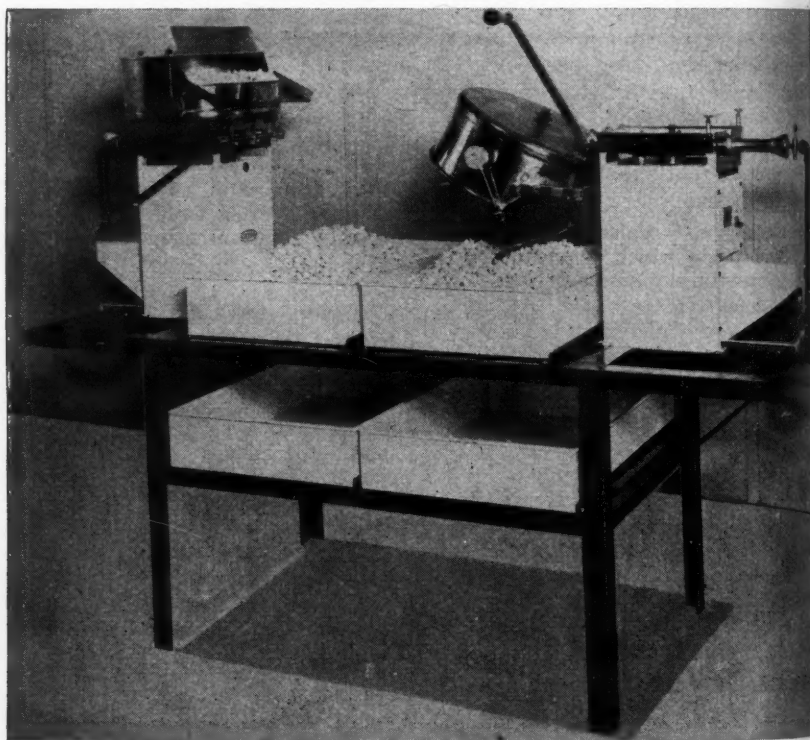
THE whistle on the popcorn wagon is a welcome sound to kiddies everywhere, no place more than at carnivals.

Not many, however, realize that were it not for butane or propane the familiar popcorn wagon would be missing many days, especially in small towns where other gas supplies or other fuels are not available.

C. Cretors & Co., 620 W. Cermak Rd., Chicago, manufacturers of popcorn machines, has lately turned to

liquefied petroleum gas as the ideal fuel and is equipping an increasing larger number of units to burn the fuel so that users may be more independent of local conditions and always assured of uniform heat for popping requirements.

Many street vendors of popcorn throughout the country are also purchasing the B-P Gas equipped machines because they are so free of burner troubles and give such uniformly good service.



B-P Gas corn-popping machine used on street corners and traveling carnivals.

Pumping Water With B-P Gas Pumps

By C. M. DENTON

Chief Engineer, Pacific Tanks Co., Los Angeles

THIS article will pertain primarily to pumps. As stated in the previous article, there are several different types of pumps. However, we will confine ourselves in this discussion to irrigating, deep well, turbine pumps, only.

These pumps are divided into three principal parts, (1) the discharge head; (2) the discharge column, and (3) the bowl assembly.

The discharge head comprises the power connection, thrust bearings, adjusting screws, lubricating devices, discharge outlet and base pan. The discharge column consists of line shaft, shaft bearings, shaft housing and column pipe. The bowl assembly comprises the screening member through which water enters, runners, or impellers, and enclosing bowls.

As is shown in the accompanying illustration (Figure 3) a well has a steel casing that penetrates to the water stratum that is to be tapped by the well. In this water stratum, perforations are located in the steel casing. These admit water to the interior of the casing and the water will rise in this casing to a level that is called the "standing level of water."

In this steel casing is placed the pump assembly, including the col-

THE PRIMARY PURPOSE of this series of articles on irrigation pumping with engines burning butane or propane is to provide dealers with basic information so that they may acquire this type of load in competition with other engine fuels.

There is no better or faster method of developing summer load than through sales of B-P Gas for agricultural operations—tractors, trucks, stationary engines, hay and grain drying, flame weeding, cotton ginning, etc. Dealers who familiarize themselves with such applications can present constructive sales facts which will bring them increased volume.

Irrigation pumping is practiced in numerous localities throughout the country. It makes an ideal summer load.

Charles M. Denton is exceptionally well qualified to discuss this field, having made many such installations in the field. He is a mechanical engineer of wide experience.—Editor.

umn and bowls. A strainer is attached to the bottom and when the pump is in operation the turbine runners in the bowls are turned by the line shaft. The length of column and line shaft is determined by the depth of water in the well when the pump is operating at full capacity.

The difference between the standing level of water in the well and the level of the water when the pump is pumping full capacity is known as the "drawdown." The water enters the lower end of the turbine assembly through the screen, is taken up by the first stage, or the first impel-

Figure 1. ESTIMATE SHEET WITH PUMPING CONDITION SHOWN.

Customer: John Doe.

Date: 6-1-1946

Address: National Highway 99.

Phone No.: 6-6253

Well Location: Same as above.

Pumping Conditions				Required Pump Performance	
Static Water Level	120 Ft.	Lift Above	100 Ft.	G. P. M.	700
Inside Dia. Well	14 In.	Friction Head	180 Ft.	Total Head	280
Depth of Well	500 Ft.	Total Head	280 Ft.	B. H. P.	64
Probable		Pump Capacity	700	R. P. M.	1765
Draw Down	60 Ft.	Pump Speed	1765		

ler, of the pump, where it receives power from the impellers, and is passed on to the next stage for as many stages as there are in the turbine assembly. These impellers impart sufficient power to the water from the shaft to force the water to the pump designed head.

The head of any pump is the height the water will go in a given size line at a given volume in feet; or it may be stated in terms of pounds per square inch against which the pump will produce water of a given quantity. These terms are explained here so the reader may be able to refer to them in later discussions regarding the measurement of power or the adapting of specific engine requirements.

The best way that a dealer can learn to sell pumping engines or fuel for pumping engines is to have a specific example of a pump worked out. We will endeavor to do this now. We will assume that in the dealer's territory a well has been drilled, a pump has been purchased

for the well, and during this period the owner of the well has been approached by the butane-propane dealer in that district on the idea of equipping the pump with a butane-propane powered internal combustion engine.

In talking to the potential customer, the dealer has presented his program and has asked the prospect for the opportunity of demonstrating with sound figures the cost of operating his well against any other source of power that he desires. In order to arrive at these costs, the dealer will have to have certain information.

Figure 1 shows a typical pump estimate sheet, at the top of which is given all of the data that are required to calculate the pump. The data will also be required to calculate the engine load. The figures are shown on this sheet in Figure 1 to the butane-propane dealer that the inside diameter of the well or well casing is 14", the depth of the well is approximately 500', and the static water level is 120'. The static

PUMP 12" EHL^N
6 STAGE

R. P. M. 1765 CURVE No. 46110

FIELD PERFORMANCE DATA

FOR

PUMP SERIAL No. 67433

NOTE: PERFORMANCE SHOWN
WITH 200' OF 8" STD X 2½ X 1½ COL.

5-14-46

HEAD - CAPACITY

FIELD EFFICIENCY %

BRAKE HORSEPOWER

GALLONS PER MINUTE (HUNDREDS)

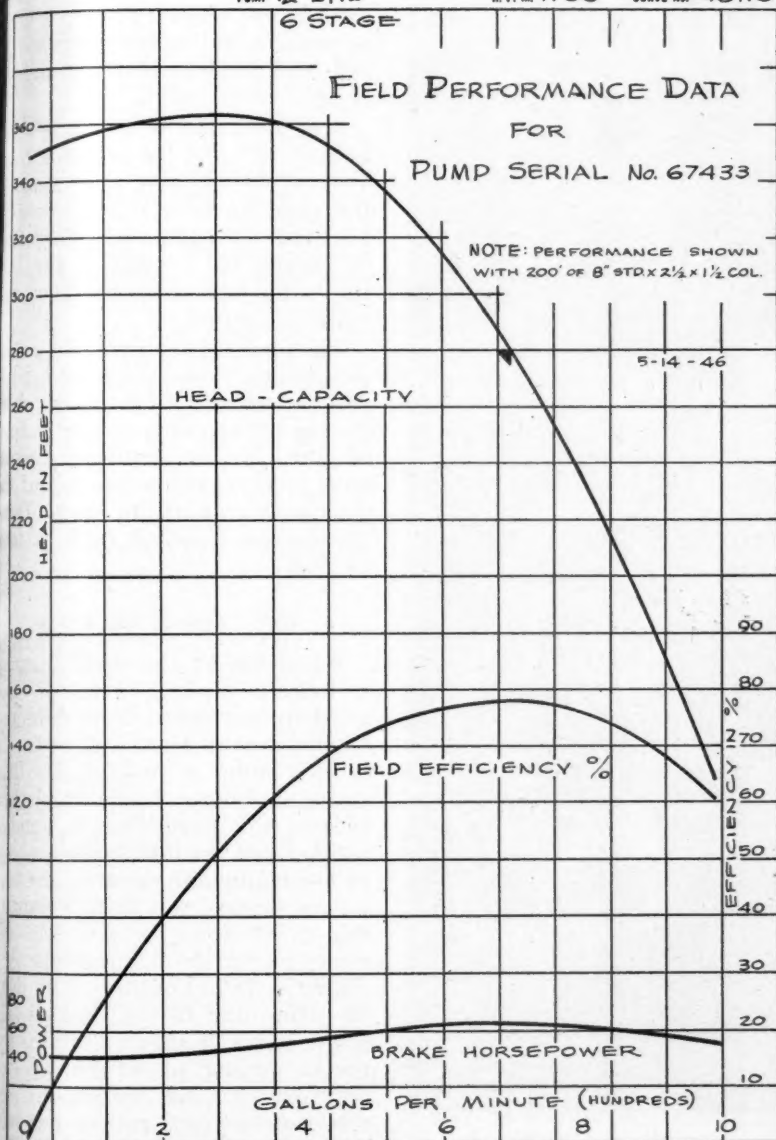


Figure 2. Representative pump curve showing head capacity, efficiency, horsepower requirement and gallons per minute.

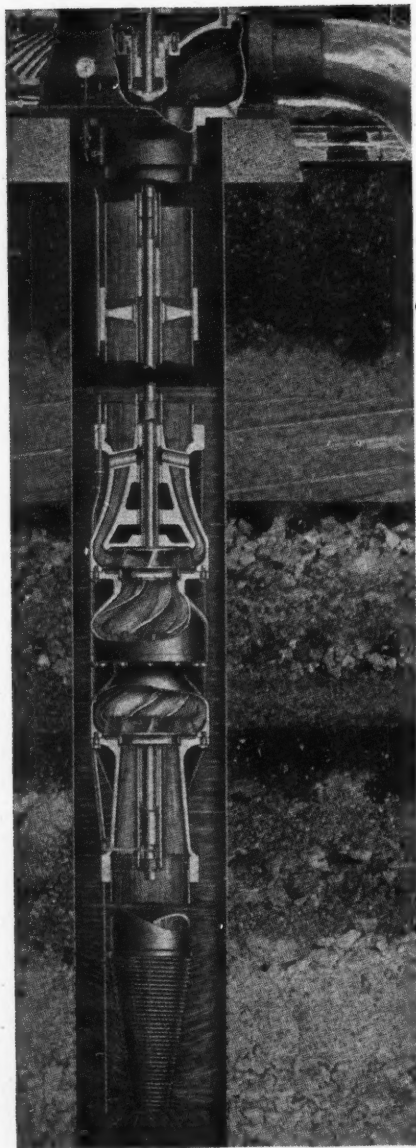


Figure 3. Sectional illustration of typical Layne-Bowler multi-stage pump.

water level is the level the water will assume when the pump is being operated at full capacity against the full head. The probable drawdown is 60'.

A combination of the static water level of 120' and the probable drawdown of 60' will give approximately the standing level of the water, or 120' less 60' equals 60'. Therefore 60' below the ground is the level the water will be in the open well without a pump.

The prospect requires 700 gallons per minute against a total head of 280', of which 100' is the lift above the top of the pump and the balance of 180' is the required friction head to the level of the top of the discharge head of the pump. These two figures together make a total of 280'.

How to Read the Curve

Furnished by the pump company will also be a pump curve developed by their engineers from field performance data. These curves for the specific pump in question are illustrated in Figure 2, and from these curves, which are three in number, is developed the total head as shown by the triangular mark on the head capacity curve, or 280'. Following this point down to the field efficiency curve, the pump efficiency is shown as 78%. Continuing on down the same line to the brake horsepower curve, it shows a total power requirement of 64 horsepower. Continue to the bottom of the curve sheet where gallons per minute in hundreds are shown, and at the above efficiencies, head and horsepower, and this will show 700

gallons per minute. The pump speed indicated on the upper margin is 1765 r.p.m. The pump is 12" and has six stages or a series of six impellers or bowls at the bottom of the column.

We will now go back to Figure 1 in which the data taken from Figure 2 are shown and we will now have the requirements of the pump itself for power. These are 700 gallons per minute against a total head of 280' requiring 64 brake horsepower with a pump speed of 1765 r.p.m. A careful analysis of these figures will be required, particularly the brake horsepower requirement and the efficiency of the pumping unit itself.

In the next article we will consider the drive to be attached to the pump to transmit power from the engine to the shaft of the pump.

More Time Given Industry To Retest LP-Gas Cylinders

Under date of April 30, 1946, the Interstate Commerce Commission issued a 20-day notice proposing the following amendment of the regulations. If adopted, this change will remove the threat of prosecution for 4B cylinder owners who have for one reason or another failed to retest cylinders that became due for such tests during the war period, and establishes a date by which such cylinders shall be retested and qualified for service, according to the Liquefied Petroleum Gas Association.

"Part 3—Regulations Applying to Shippers—(Add) Section 303 (p) (14(m), to read as follows:

"(p) (14) (m) Because of the present emergency and until further order of the Commission, liquefied petroleum gas cylinders constructed in accordance with ICC specification 4B which became due for quinquennial retest between Dec. 7, 1941, and Dec. 31, 1945, must be removed from service on or before January 15, 1947, unless retested as required by section 303 (p) (13) (a), (b), and other pertinent sections of these regulations."

It is expected that the Commission's action will be guided by the public reaction to this notice. In the absence of any objection the Commission will probably amend the specifications to include the quoted section. Action toward this proposed relief was taken by the Commission upon application of LPGA. When, and if this amendment is made effective the industry will be notified and given specific information and recommendations.

Mississippi Enacts Privilege Tax Law Affecting Dealers

The State of Mississippi legislature has passed a bill providing for "privilege taxes" that will affect LP-Gas distributors.

House Bill 1060 authorizes the levy by countys and municipalities of an annual privilege tax on persons selling or distributing LP-Gas or LP-Gas systems in the amount of \$50 if a bulk plant is maintained in the state and in the amount of \$5 if the bulk plant is located in another county or municipality. It was approved April 8.

H. B. 1061 places an annual privilege tax of \$200 on persons selling or distributing LP-Gas or LP-Gas systems in the state. Persons maintaining bulk storage plants in Mississippi are exempted. This bill was approved April 9.

The Water Heater Load Belongs to Gas

By ELMER W. CONE

Western Representative, Ruud Manufacturing Company

PEOPLE want and need more hot water.* Soon we will be selling not only more automatic water heaters, but they will have to supply greater quantities of hot water at wider temperature ranges than ever before.

Those who depend upon gas for hot water will look to the gas industry for advice. That it will be profitable goes almost without saying. The more hot water used, the greater the gas load. Today's best opportunity to increase the domestic gas load lies in the water heating field.

The change in hot water requirements is not revolutionary. It will not happen over night, nor will it make all the existing gas water heaters suddenly obsolete. Thousands of users will continue to get satisfaction from their present equipment for a long time to come. But the change is coming, and it behooves the gas industry to sell water heaters today that will care for our customers' needs tomorrow. To accomplish that we should appreciate the causes for the change and

know what kind of water heaters are required to meet the new demands.

There was a time when it was said that there were more automobiles than bath tubs in the United States. Whether that was true or not, we hardly imagine it will last for long.

Not many of the millions of post-war homes will be without at least



Elmer Cone showed dealers where profits lie in selling water heaters.

* A paper read before the LPGA convention in Colorado Springs, May 27-29. Abstracted by BUTANE-PROPANE News.

one bath tub, and many will have two or more. Shower baths will be popular. Showers may be used with less hot water; but more shower baths will be taken because they are convenient. Powder rooms will be popular in modern homes. So will lavatories in bedrooms. There will be sinks and double sinks. All these fixtures need more hot water.

What New Appliances Mean

But more than anything else, the widespread promotion and sale of two new appliances has emphasized the changing hot water requirements. The automatic home laundry machine and the dishwasher must have certain quantities and temperatures of water to operate satisfactorily. Indeed, much of their ability to function properly is dependent on the use of more hot water at higher temperatures than conventional equipment.

Research has proven the hotter the water the whiter the wash. Statistics show that automatic laundry machines use more hot water than conventional washers. Automatic dishwashers cannot function successfully without extra temperatured water. More water and extra temperatured hot water are "musts" for these two appliances.

That millions of home laundry machines and automatic dishwashers will be sold post-war can hardly be doubted. If for no other reason than the fact that they take the drudgery out of regular household chores, people will buy them. The gas industry has a responsibility to see that their customers have the kind of hot water service to make these appliances function properly.

These things, then, have brought about a new demand for hot water: More hot water appreciation; more

hot water fixtures; more hot water appliances.

Most sales executives agree that hot water requirements are changing. Not all are agreed on the answer to the problem. Constructive controversy is a good thing. But the change in water heater selling has already begun. The proportion of orders for larger sized water heaters has noticeably increased, and we have reason to believe the same thing is true for water heater manufacturers generally.

But merely to increase the size of water heaters is not enough. This question must be answered: What kind of a water heater should the gas industry sell to meet these new requirements?

In other words, what is right selling for the gas industry today? To our mind, right selling is made up of three factors. The first of these is right quantity.

How Much Water Needed?

What is the right quantity of hot water? It is that quantity of hot water that will supply the customer's regular peak demand. If you can supply the peak demand, all other requirements will automatically be supplied.

Peak demands are not difficult to determine. It is merely a matter of intelligent questioning concerning habits, and a knowledge of fixture capacities. Excellent sizing methods have been provided by the American Gas Association and by water heater manufacturers. They have not been used as widely as they should.

It is more important than ever that we train our salesmen in proper sizing methods and insist that they be used. Even more important, the thousands of dealers who are selling gas water heaters need training in sizing

methods. Salesmen and dealers alike need information concerning the new demand for hot water.

Automatic water heaters cannot be properly sized by tank capacity alone. Size is not always a true measure of value. A cubic foot of manufactured gas is exactly the same size as a cubic foot of natural gas; but it contains only one-half as much heating value.

So it is with water heaters. Not all 30-gallon water heaters are alike. Proper sizing should take into consideration the recovery capacity of a water heater, as well as the tank size. The sooner we start thinking in those terms, the better it will be for gas water heating because gas has the advantage of quick recovery. The proper formula for water heater sizing should be: Tank size plus recovery rate = peak demand.

A water heater so sized is not guess work. It will cover your customers' requirements with a minimum of initial and operating costs. It leaves no loopholes for future competition.

The outstanding weakness of competitive fuels is that they must sell a large storage tank to meet peak requirements. Let's not imitate them by selling tanks that are larger than absolutely necessary. A 30-gallon, full speed, gas water heater is equal to a 100-gallon off-peak electric water heater. Each will supply 100 gallons of hot water per day, with a peak demand of 50%. The advantage lies with gas because of its speed. Let's exploit that advantage.

The second factor in right selling is right temperature. What is right temperatured hot water? It is that temperature which meets the customer's every regular requirement.

Hot water temperature is an indefinite thing. Few people can tell you within 10 or 20 degrees of the

hot water temperature in their homes. As a matter of fact, the very terms we use to describe various temperatures of water are indefinite. However, many people agree on the terms, cool, tepid, lukewarm, etc., used every day to describe hot water?

Public Needs Instruction

It seems probable that with all the new demands for hot water, the public will have to become temperature conscious. The gas industry can do itself a favor by leading the way to a better understanding.

What is the temperature range required in a post-war home?

Take bathing for example. There are all kinds of baths. The athletic young man may like a cold shower with a temperature anywhere from 65° to 85° F. Dad, being older, likes his bath somewhat warmer, say a lukewarm bath at 85°-95° F. Mother prefers a bath varying from 95° to 110° F. All these may be needed in one home in one day.

Dishes washed by hand usually take hot water from 120°-150° F. But many people like to spray with 160°-180° extra temperature as a rinse. Greasy pots and pans can hardly be cleaned thoroughly under 150°-180°.

Silks and woolsens should be laundered in 105°-120° warm water. Colored fabrics should be washed at 110°-130°. But cottons and linens, particularly where whiteness is desired, should have at least 155°-160° temperature.

Household cleaning is much easier with the right temperatured water. Light soil should have 110°-140°, heavy soil should have 140°-160° hot water.

Hot water of the right temperature for personal use is increasingly important. A shampoo, for example, may range from 80°-110°, dependent

upon personal choice; but a steaming hot turkish towel would hardly be effective under 150-160°.

Thus we find daily household temperature ranges from 65 to 180° F. Not all homes will require that large a range today. Some may never require it. Others may need it tomorrow.

Tank Temperatures vs. Working Temperatures

If we are to rank as hot water experts, we must recognize the difference between tank temperatures and working temperatures. The temperatures we have been talking about are working temperatures. Heat losses in transmission must be taken into consideration when establishing tank temperatures. Let us follow through a typical laundry example since heat losses are perhaps more pronounced there than for any other use.

Step One: The temperature of the water in the tank is, let us say, 160° F. The automatic washing machine is several feet from the tank. First the washer receives a slug of cold water standing in the hot water pipes. Second, the hot water loses some temperature to the cold pipes.

Step Two: That makes the delivered temperature at the washing machine perhaps 155° F. The washer is cold and the clothes are dry. They can easily lower the hot water temperature ten more degrees. If the clothes have been presoaked at 105-110°, they are partially filled with low-temperature water, which can cause as much as 25° heat loss.

Step Three: Thus it is possible to start with 160° water in the tank and end up with 130° working temperature in the washing machine. Such losses must be compensated for in the tank.

Post-war gas water heater temperatures should be on a selective basis. Not everyone will want extra tem-

peratured hot water all the time. Surely it is not good judgment for the gas industry to force extra temperature on those who do not want it.

It is an easy matter for gas water heaters to supply selective temperatures. All that is required is to provide a full temperature range and make it easy for the customer to make a selection. Gas water heater users can carry any normal temperature they desire. All temperatures below that can be had by mixing cold water. Extra temperatures can be quickly supplied by simply adjusting the thermostat.

It would be impossible for us to talk about right selling without mention of the third factor, right quality—the sort of quality that will protect the gas water heating load for years to come.

Little mention has been made of competition; but no one who is seriously interested in this business can help but be conscious of competitive possibilities in the future. It is not our intention to wave a red flag, but we must acknowledge the facts.

The quality of the gas water heaters sold today will have much to do with the competitive picture in your community tomorrow. The best time for competition to effect a change is when the old equipment wears out or fails to give satisfaction. The best protection the gas industry can give its water heating load now is right selling and that means right quantity, right temperature, and right quality.

Today the water heating load belongs to gas. We will no doubt sell all the gas water heaters we can make for some time to come. But the future may be another story. This is the time to protect your load by right selling. Who but you in your community will take the responsibility for leadership?

Look to the Railroads!

THE romance of the United States of America is closely tied in with the history of its railroads. So accustomed have we become to dependency upon the railroads we accept their services as a matter of fact, giving but little, if any, thought to the magnitude of the essential job which they perform in preserving American unity.

Before their advent, the interests of many sections of this country were entirely local and self-centered. The South knew little of the North excepting by hearsay. The North looked upon the west as an evil seducer of its population. The West looked upon both the North and the South as communities of money-lenders to be exploited in the development of the West by fair means or foul.

I do not mean to discount the service which our modern means of communication have rendered this Nation in welding it into an indivisible unit, but more than the telephone, telegraph, radio, and airplane, our system of American railroads has accomplished this end of unity.

My New England breakfast is not complete without fresh California fruits rushed to my table by refrigerated freight trains. I wear cotton clothing which was, in all

By C. C. TURNER

Special Representative
Butane-Propane News

probability, manufactured in North Carolina and shipped into New England by railroad. The B-P Gas which I use was transported from the middle-west by railroad tank-car.

On the other hand, shoes, fine woolens, precision tools and fine hardware are transported from New England to all sections of the United States by trains. The railroads have so interwoven our domestic economy that no longer can any one section of America be sufficient within itself.

What are some of the facts pertaining to the railroads that are of interest to us as B-P Gas merchandisers, and just where in the complicated system of railroading can we be of helpful service, save the railroads money, and at the same time make a little for ourselves?

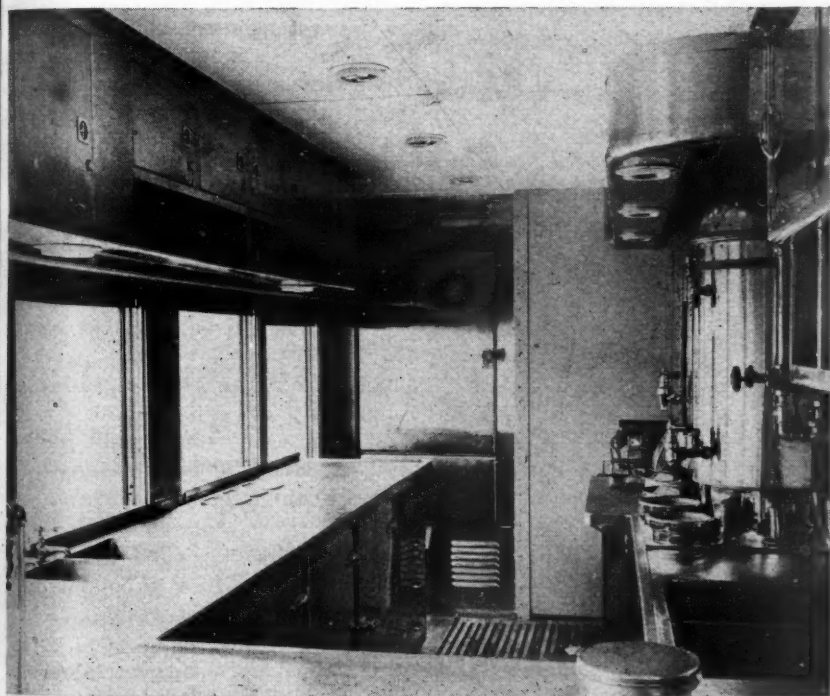
First we must have some idea of the potential market which we have already started to invade in a small

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way. There are approximately 245,000 miles of railroads in the United States, and about 43,000 miles in Canada, making a total of 288,000 miles in English-speaking North America. In normal times our railroads employ from a million to a million and a quarter people.

Normal freight traffic exceeds one and a half billion tons of freight per year. During the war this tonnage was more than doubled. Normal train mileage exceeds 30,000 trips around the earth

per year. Over 500 trains a day arrive at and leave the Grand Central station in New York. The Pennsylvania station in New York handles 750 trains a day, and the little old South station in Boston receives and sends out 725 trains in every 24 hours. Chicago is the world's greatest railroad center, being the terminus of nearly 40 lines whose total mileage is in excess of 122,000 miles!

The tentacles of this octopus among businesses extend into almost every known industrial ap-



Part of the kitchen of a dining car on the Bangor and Aroostook Railroad, Maine. This has an estimated cooking capacity for 500 patrons during a 200-mile trip. A built-in Servel Electrolux refrigerator with stainless steel door is shown in the upper left hand corner.

plication of the B-P Gases and clutch others which are particularly its own. Railroads possess machine shops and even factories of their own in which the processes of heat treating and tempering are employed. I do not profess to know what all of these special applications are, but from this random list you may gather some inkling as to the magnitude of our potential market.

1. Air conditioning of passenger cars.
2. Cooking fuel and refrigerating fuel on dining cars.
3. Fuel for yard switching engines.
4. Driving electric generators by gas engines.
5. Pumping water for locomotives by gas engines.



J. F. O'Brien, manager of Utility-Philgas distributing agency at Bangor, Maine, who has serviced the B. & A. dining car account since propane was installed.

6. Keeping water towers from freezing.

7. Heat treating and tempering.

A. Small parts and tools.

B. Car-bottom annealing furnaces.

C. Diffusion flame forge furnaces.

D. Babbit, brass and bearing metal furnaces.

8. De-greasing torches.

9. Weed-burning torches.

10. Space heaters for:

A. Perishable merchandise in fruit houses.

B. Freight cars carrying perishable merchandise.

C. Shops.

D. Stations.

E. Houses for crossing attendants.

F. Switch houses.

G. Offices.

11. Oxy-propane cutting in repair shops or at the scene of wrecks.

12. Drying casting molds.

13. Soldering and brazing.

14. Removing or shrinking on the tires to locomotive drive wheels.

15. Gas driven portable electric light plants.

16. Emergency, or stand-by, gas lighting.

17. Lighting in small stations where electricity is not available.

18. Paint removing torches.

19. Switch heaters.

20. Pre-heating worn rail ends at their junctions prior to building them up to normal height again.

21. Rail bending.

22. Cooking equipment in railroad restaurants, and in dormitories for train employees.

These are but a few of the actual applications on American Railways,

most of which will be discussed in the chapters which are to come.

B-P merchandisers are not obtaining all of the business that might be theirs from the railroads, and this is because of a mistaken idea that it is hard to obtain, requires the playing of a lot of internal politics, and must be obtained at little or no profit. These ideas are false.

Railroads and railroad employees are entirely practical. They won't buy a "pig in the bag." Railroad management is incessantly on watch for methods that will either improve or reduce operating costs. What you sell them must be 100% perfect in operation, safe, and dependable. No amount of winning or dining will keep you in a railroad account if the men in the ranks condemn either your product or your service.

Most railroad executives have climbed to executive positions from overalls and jumpers. It is the smallest dog that yaps the most,

and so it is with human beings, for the hardest man to sell is the little fellow whose vision is pedagogic and limited. The big fellow usually has climbed on the shoulders of smaller men due to ability and vision.

If your product has merit, it appeals to the vision of such men, but that which you have to offer must stand up under three searching questions.

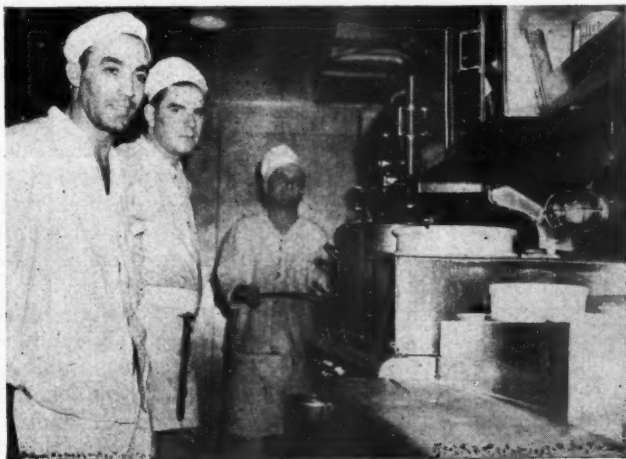
1. Is the product and the service practical?

2. Is the product and service proposed entirely dependable?

3. Will the product and the service which you propose improve railroad service and operation, and not increase operating costs?

If you can prove these things to a railroad executive and are willing to demonstrate your claims to him, the gas application is, in all probability, sold. If you can demonstrate to him that you can save his railroad money in addition to

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A dining car kitchen, using propane, on the Chicago, Milwaukee, St. Paul and Pacific Railroad.



these other values, you can remove the words "in all probability" from the foregoing sentence.

I base the foregoing on personal experience, and illustrative of it is the time that I called the executive of a rail service on long distance phone in Chicago. There were two or three calls back and forth at an expense of some \$30, but the job was sold and in writing within 72 hours. We merely had to furnish the gas and gas cylinders to him when and as he wanted them, for he furnished all of the equipment.

Quick Sales, Long Profits

That was in 1938. The consumption has consistently run 120,000 pounds per year with that one company for the purpose of building up rail ends since that time. This year, if all goes well the consumption on this one job will have passed the million-pound mark. I never have laid eyes upon the fellow or any of his employes, and they have never seen me. Of course, I put a lot of thought into what I was going to say before I made the first long distance call, but it probably was one of the easiest sales I ever made in my life, and certainly the best paying one from the point of expense involved.

Back in 1937 a wide-awake gas dealer got it into his head that propane gas should be used for cooking and refrigeration on the dining cars of the Bangor & Aroostook Railroad.

This road runs from Fort Kent, to Searsport, Maine, a distance of some 242 miles, all within the state of Maine, for which reason it can,

on occasion, give the Bronx razz to the Interstate Commerce Commission when certain rates are discussed, and consequently has been a money-maker when other railroads have been gasping in the throes of economic depression. Aside from this fact, the B. & A. R. R. has had money to spend on its rolling equipment and has not been afraid to do it when it has seemed advantageous or desirable, as it did in this case.

The first installation was made on the president's private car and was added to until it now consists of a "Garland" range having four top burners and an oven; also a broiler, two side-arm water heaters, and a Servel Electrolux refrigerator. As a result of this installation, all dining cars of the Bangor & Aroostook Railroad are now propane-equipped, having an 8-cubic foot Servel Electrolux refrigerator, a hotel range with 4 top burners and an oven, a coffee urn, and a griddle.

Special Appliances Installed

The original construction of the gas appliances has been modified to fit into the available space on each car, and the exterior panels have been replaced with panels of stainless steel. The cost of cooking appliances, together with changes in them and the interior of the dining car kitchens has approximated \$14,000 per car!

Quite an investment, one might say, for cooking and refrigerating facilities in a single dining car, but that was back in the early days when not much was known about the application of B-P Gases to

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railroad dining car service, and the B. & A. R. R. spent much money in pioneering a development by which many railroads have since benefitted. Today, even with increased costs, the same job could be accomplished for approximately half this amount.

In spite of this high initial cost, the installation of B-P Gas appliances on the B. & A. R. R. dining cars has paid dividends to both the railroad and the gas dealer. Meals served vary from as few as 200 up to 500 per trip. Fuel costs per meal served have varied widely, but mark you, at their worst have not been above 67/100ths of one cent per meal and have been as low as 24/100ths of a cent! This is a fuel cost of which any restaurant might be proud without the benefit of refrigeration. I might add that meals served on B. & A. dining cars are the kind that you like to remember.

As for the dealer, this account

has not been one of that kind on which rates were cut or where the parent company has stepped in and taken over to the exclusion of the dealer. Full retail price has been charged the railroad by the dealer without question on their part, and the fuel bill has been somewhere in the vicinity of \$1600 per year with a gross profit of approximately \$780 for the dealer.

The account has required a minimum amount of service, and the dealer's net profit has been not less than \$600 per year. The dealer's investment in equipment approximates only about \$400 for all of the cars served, including the president's car! Here, again, is a case of the initial investment being repaid out of profits within the first year.

Anybody's guess may be good as to the number of dining cars operating on American railroads. The railroads, themselves, do not know, and the government is entirely at

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Propane - burning
water heater of large
capacity in Milwaukee
railroad diner
kitchen.
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loss in arriving at a figure. This is because many of the roads operate their own dining service, others lease it out, and certain phases are handled by the Pullman Co.

Another confusing factor is that dining cars are subdivided into several groups such as diners, club cars, buffet cars, restaurant cars, etc. A conservative estimate of the number of cars on which cooking equipment is installed has been placed by one railroad authority as being 10,000. The Pennsylvania system alone operates about 1000 cars in which meals are cooked or lunches served.

Other Fuels Involve Hazards

The fuel at present used is either coke or charcoal, with live steam from the locomotive for the urns and steam tables. The fire hazard from such fuels is great in event of accident, and kitchens using them require ponderous ranges as well as fuel storage space.

More punch can be packed in the same cooking space with B-P Gases than with any other fuel. Some roads have experimented with electric cooking appliances, but to use one executive's words, "They are slow, eat up a lot of motive power, and brother, you are all done cooking unless the train is in motion!" B-P Gas equipped cars may be set off on a siding for a week if necessary, and continue to function.

The manufacturers of dining cars are at the present moment turning to B-P Gases as the ideal dining car fuel, and there will be a great demand for our fuel from the railroads for this purpose,

alone, within the next few months. There is more than a probability that present equipment will be junked, and new gas equipment installed in order to make the cooking fuel and methods of all the railroads uniform.

Ten thousand dining cars (and the number is conservative), can eat up a lot of gas in a year's time. It can conceivably be in the vicinity of 4,000,000 pounds. Who is going to get this business?

Are B-P Gas dealers going to be sufficiently on their toes to render the necessary service and reap the profits, or will they force the railroads to make filling arrangements with bulk plants and parent supplying gas companies? The demand is already here, and it is increasing rapidly. I suggest that you get busy with your nearest railroads at once before it is too late!

Kitchen Planning to be Theme of McCall Magazine Awards

Kitchen Planning will be the theme of the Sixth Annual Award offered by McCall's Magazine, through the American Gas Association to public utility operating companies, home service directors, or representatives, or directors and members of the staff of companies engaged in kitchen planning operations, in the period from Nov. 1, 1945, through June 30, 1946.

The awards will be presented to the department, or department head, or individual deemed to have made the most outstanding contributions to the advancement of living by means of educating the American housewife toward better planned kitchens that made use of gas equipment.

— Regional Associations —

Their Ideals and Practical Purposes

By CLIFFORD JOHNSTONE

Managing Director Pacific Coast Gas Association

THE subject of associations,* and what they can do for industry is a difficult assignment, particularly

for a professional association executive.

If he sticks to the truth and tells all, it will be a record of heartache and partial frustration which will have an audience in tears in no time. If he puts his best foot forward and talks of success and accomplishment, he will be accused of bragging, particularly by those who know him and his association.

An association is necessarily a very inefficient tool for reaching quick decisions, but is the best means of securing joint action among diverse interests. If it really is an association, it approaches a pure democracy in which every last interest in its membership must agree before action is taken.

In some industries the officers of associations are given power to act on certain matters without consult-

ing the membership. They may, for instance, represent the industry before legislative committees, conduct negotiations with other industries, or discipline members for infractions of industry rules. These are not true associations; they are service organizations delegated to do certain jobs for the industry. The Independent Natural Gas Association is the nearest approach to this type of organization in our industry.

Where this fundamental limitation on associations' effort is recognized and thoroughly understood, I think members are happier about the functioning of associations. There still remains a great deal for the associations to do.

I like to look on an association as the idealist of its industry. To it are brought the best thoughts of each of its members. It can reveal in theories and no harm can come from it. It gathers only the prime ripe fruit in the garden of its industry's ambitions and offers them to all who have the vision to partake.

The transactions of any well-regulated association should be years ahead of average performance in its industry. It sets the goals and begs the industry to strive to reach them. I am not going into de-



C. JOHNSTONE

*Delivered before The Southern Gas Association, Galveston, Texas, March 21, 1946. Abstracted by BUTANE-PROPANE News.

tail as to what these goals should be and what activities are proper for an association in the gas industry. There are too many of them. The least idea of the lowliest member is worthy of attention and exploration, for none of us are wise enough to see very far ahead.

Must Keep Up to Date

We do know that our industry needs new methods, new inventions, new processes, new viewpoints, new fields of usefulness, and better trained employees. We must have them in a constant stream. I know of no better way to get them than through an active association.

If these general premises are sound, it follows that an association and its members must be close to one another, both geographically and in spirit. The territory of the association should be limited to an area which permits a representative attendance at meetings large and small, and frequent visits of association executives to its most remote corners. The membership of an association is a cross section of human nature. Some are belligerent, some are timid; some are interested, some are indifferent; some are self-sufficient, others are frequently asking advice. To weld these varying temperaments into a steadily working group requires frequent personal contact, between members and those who have the responsibility of making the industry's program.

Regional associations are needed, too, to prevent cluttering up national associations' machinery with purely regional matters. Much as I deplore that argument-stopping

phrase "our conditions are different," it is true that each region is faced with a few distinct and peculiar problems, perhaps due to climate, natural resources, or state legislation which it must solve for itself. It should have the machinery to do so.

The regional association is useful for many other reasons too obvious to need special mention. For instance, appliance merchants are usually organized on a regional basis and should be met with frequently if we are to have adequate dealer support. One very important function is the encouragement of the industry's rank and file. The regional association is a place where they can get and give inspiration and information and become acquainted with the fellow who does the same work in the next town.

An Active Member Is Best

The goal of every association, however impossible of actual attainment, should be to give each member at least one job to do every year. A working membership is an interested membership. Association work broadens and develops men and women and makes them more valuable to their employing company. Regional statistics, advertising, publicity and surveys are frequently of more value than when on a national basis and are logical routine for the regional association.

The dangers of over-organization are almost as great as the weakness of under-organization. I can, however, conceive a considerable industry advantage in having the national association program sup-

ported by a number of well organized regional groups which together cover the country. They would serve to bring the needs of the front fighting line into headquarters and to carry the details of the national effort back to the point of use. The industry would be more closely integrated and its programs more likely to be translated into action—everywhere. It might even prove less costly because of the larger membership it would occasion.

Comparison of Associations

The Southern Gas Association is in many ways quite similar to the Pacific Coast Gas Association. It is relatively remote from the center of national activity. It has a long and distinguished history of accomplishment and service, with traditions and customs that give a personality to the association. The territory served is large and includes both natural and manufactured gas service and is the home of many appliance manufacturers.

In a territory somewhat similar in shape and area, the Pacific Coast has less than 20 important gas companies—the South four times that many. Pre-war we had some 60 gas appliance manufacturers in our territory—the South had about 30. Pacific Coast gas companies serve 2-1/3 million customers with an annual revenue of \$125 million; Southern companies serve over 2 million customers and collect more than \$170 million annually. These similarities are striking.

The PCGA has a relatively small membership, about 1,000 all told, but it is a quality membership. It

numbers only active and interested members who come to us without solicitation. The organization parallels that of the American Gas Association but is cut down to local size. No differentiation is made between manufactured and natural gas companies.

There is a very strong and well organized manufacturers section. Our manufacturers work side by side with the utilities, and the advantages to both and to the industry as a whole are obvious. We are one of the few regional groups still publishing its work in an annual volume of proceedings. We think it is worth its cost and we are proud of the demand for the volume from all parts of the English-speaking world. Our committees have authored and published many other useful publications.

We are frankly opportunistic and try to never let a by-law, a rule or custom stand in the way of doing something which we feel needs doing!

Calorific Value of Gases Determined by New Method

A subgroup of Committee D-3 on Gaseous Fuels of the American Society for Testing Materials, under the chairmanship of R. S. Jessup, National Bureau of Standards, has completed a tentative method of test for calorific value of gaseous fuels by the waterflow calorimeter.

Suggestions from members of the Society on a proposed draft were reviewed at a meeting recently held in Pittsburgh. The new method is expected to be ready for presentation to the Society for formal adoption at its June meeting.

Safe Operation of Motor Vehicles Transporting Liquefied Petroleum Gas

THE prevention of motor vehicle accidents is important in any industry, but it is of special urgency in the transportation of liquefied petroleum gases. These liquids will evaporate rapidly at atmospheric pressure and are therefore kept in liquid state under pressure. This pressure depends upon the composition of the gases and the temperature surrounding the container.

On a hot day pressures close to 200 p.s.i. may be developed with propane. Thus where a tank pipe, or fitting is ruptured in a motor vehicle collision, the flammable and explosive gases may escape and spread rapidly over a wide area and generally have no difficulty in finding a source of ignition.

Most tank outlets are equipped with excess flow valves or quick closing valves which are designed to prevent the escape of liquefied petroleum gas in the case of a ruptured pipe or fitting.

If gas does escape, it may flow some distance, depending upon the terrain, before ignition occurs, at which time the fire will travel back to the source of leakage. It is, therefore, highly important that all pressure equipment such as tanks, pumps, piping, and fittings be properly equipped with excess flow or back pressure check valves and adequate relief valves of approved design, where required, and main-

This article is reproduced from a pamphlet prepared by the Liquefied Petroleum Gas Research Committee of the National Conservation Bureau which is the accident prevention division of the Association of Casualty and Surety Executives. Copies of the original pamphlet may be secured on request from any of the member companies of the National Conservation Bureau.

tained in safe operating condition.

Moreover, it is essential that the personnel be thoroughly trained in the handling of liquefied petroleum gases as well as in the operation of motor vehicles. These are responsibilities of management and its supervisory staff.

Management's Part In Safety

1. Conditions within an operation, whether they relate to quantity and quality of product, morale, supervision, equipment, expense or the occurrence of accidents, reflect to a large extent the ability and the attitude of top management. Too great emphasis cannot be placed on the value of executive interest, support and personal action in accident prevention.

Supervisory Staff's Part In Safety

2. It is the duty of supervisors to see that every item of the safety program outlined herein is followed. It is the supervisor's responsibility

to see that all equipment complies with and is maintained according to the requirements of the Interstate Commerce Commission, state or municipal regulatory bodies, or in lieu of such requirements, in conformance with the standards of the National Board of Fire Underwriters as published in the latest edition of their Pamphlet No. 58.

3. Supervisors must make certain all employees are instructed in their duties and are familiar with the special responsibility due to the product's nature.

Maintenance of Equipment

4. A safety maintenance program should be adopted wherein all vehicles are examined by a competent person at regular prescribed intervals, according to the recommendations of the manufacturer of the equipment. Such inspections should include a check of the following:

(A) All pressure vessels, pumps, piping, fittings, and hose should be checked daily for leaks, external damage, and loosening of fastenings. Only a representative of the manufacturer, or one skilled in the practice who has been approved by the manufacturer, or one under the personal direction of a certified pressure vessel inspector should make any repairs or adjustments to relief valves. Work on relief valves should be done only after their removal from tanks.

(B) Motor cleanliness (motor should be free of excess oil and grease to reduce the fire hazards).

(C) Emergency equipment, such as excess flow valves, quick closing valves, fire fighting equipment, and the like in conformance with requirements of the Interstate Commerce Commission, state or municipal regulatory bodies, or in lieu of such requirements, in accordance with the standards of the National Board of

Fire Underwriters as published in the latest edition of their pamphlet No. 58.

(D) Signs and lettering on tank trucks and tank trailers to warn other vehicle operators of the flammable or explosive nature of the cargo.

(E) Drag chains, fire extinguishers, chock blocks, and proper tools.

5. Vehicles involved in accidents should be carefully inspected before they are returned to service. Special attention should be given to any evidence of leakage, stress, or shifting of cargo tanks. If there is any indication of damage to a cargo tank, a careful examination should be made by a certified pressure vessel inspector. Repairs should be made only by persons skilled in pressure tank work, and should meet the requirements of the inspector.

Repaired tanks should not be returned to service until their use is approved by the certified pressure vessel inspector.

6. At regular intervals, as may be required by governing regulations for pressure vessels, cargo tanks should be internally inspected and given hydrostatic tests by certified inspectors of pressure vessels.

7. In the interest of safety it is necessary to remove flammable gases or vapors from tanks to be internally inspected, or to be repaired, or to be altered. It is essential, therefore, that such tanks be thoroughly purged. A good method of purging is by filling with water. During the filling operation the gas or vapors should be released through a vent pipe at the top of the tank. If it is advisable to burn the gas at the end of the vent, a copper gauze flame arrester should be provided at the end of the pipe to prevent flame from entering the tank.

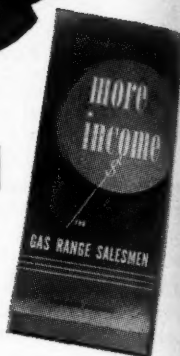
8. Drivers should be required to report promptly in writing to their

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supervisors any physical defects noted in trucks, cargo tanks or equipment while driving or making deliveries.

Selection of Drivers

9. New drivers should be properly placed to make the best use of their abilities. The routine should include physical examinations by a doctor, driving tests, and safe driving references from former employers. All other points being equal, preference should be given to those with mechanical aptitude which, with proper training, will better enable them to understand the pressure equipment encountered in the transportation and delivery of the liquefied petroleum gases.

Training of Drivers

10. Before being permitted to make deliveries, drivers should be fully instructed regarding the purpose and use of valves, gauges and other appurtenances which they may encounter.

11. Drivers should constantly attend their vehicles during the entire loading and unloading operations.

12. Sources of ignition should be prohibited in the immediate vicinity of loading or unloading operations. When such sources of ignition cannot be controlled, no transfer of liquefied petroleum gases should be made. Such sources of ignition are as follows:

(A) Smoking—Neither the driver nor any other person should be permitted to smoke in the vicinity of loading or unloading operations.

(B) Matches—Drivers should be prohibited from carrying any matches other than "Safety" matches (such as strike on box matches or book matches.)

(C) Running Motors — Truck motors should be stopped when loading or unloading cargo tanks except

when the motor is used for the operation of a pump. In such case, it is important that the motor be stopped before making or breaking filling pipe connections immediately adjacent to the tank.

(D) Static Electricity—In order to dissipate static electricity, containers which are not in metallic contact with each other should be electrically bonded before transferring flammable liquids. In lieu of a separate grounding conductor, a positive bond made through a metal-reinforced hose is considered satisfactory.

(E) Open Flames or Sparks—Loading and unloading operations should not be carried on in the vicinity of open flames or sparks as from bonfires, acetylene or electric welding, gas lights and burners, boilers or fires in nearby buildings.

13. Before connections are made precaution should be taken against the rolling of the vehicle by setting the hand brake, placing vehicle in low or reverse gear, and by the use of chocks. Avoid grades if possible.

14. Hoses, their connecting unions and valves should be protected against injury. They should not be dragged over the ground. Hoses should be carefully coiled in a tub or on a reel when not in use.

15. The contents and capacity of the tank to be filled should be carefully checked before and during loading operations to avoid filling in excess of approved ICC filling density. This is highly important. Only liquefied petroleum gases having a vapor pressure, at 100 F., not in excess of the working pressure of the receiving tank can be loaded.

16. During filling operations, the driver should be on the alert for evidence of leakage. When a leak is detected, filling operations should be stopped (including stopping the motor

used to operate the pump and closing of the main valve). The leak should be definitely located by a soap water bubble test and when it has been stopped, the filling operations may be resumed. When the truck motor is used to operate the pump, however, the motor should not be started until any dangerous concentrations of gas have been dispersed.

17. While the tank truck or trailer is enroute the main valve on tank should be kept closed.

18. When liquefied petroleum gases are handled in cylinders, care should be taken not to damage valves in loading and unloading operations. Wherever provision has been made for valve caps, they should be used. Cylinders or bottles should not be subjected to rough handling.

19. In loading cylinders of liquefied petroleum gases in trucks where no special racks are provided, they should be placed in an upright position and secured in place to prevent shifting and consequent damage to cylinders.

Fire Control

20. Much good judgment is required in determining the proper action to be taken in event of a fire. Some cases have been reported in which the operators heroically attempted to drive flaming trucks to the outskirts of the city in an effort to reduce danger to human life and property. Whether or not this is the proper action to take depends upon the distance the truck must travel to reach open lots or fields because the element of TIME is most important in controlling fires in liquefied petroleum gas trucks.

Fires in liquefied petroleum gas trucks, in general, can be divided into two groups: (1) a minor fire in the truck with no involvement of the cargo (liquefied petroleum gases), and

(2) a major fire involving the cargo. The action recommended in each of these cases is as follows:

(A) When the driver first detects a fire in his truck, he should stop immediately and ascertain whether or not there is any immediate danger to the cargo. If not, he should first attempt to extinguish the fire with his fire fighting equipment.

(B) During the time while the driver is using the fire extinguisher on a minor fire, as mentioned above, he should ask any passerby to send for the fire department and police. It is better to call on these departments when they are not needed than to find out later they are needed and wish they had been called.

(C) In the event of a more serious fire where the cargo is involved or in cases where liquefied petroleum gases are being liberated due to a damaged tank or cylinder (as in a motor vehicle collision), the driver's first responsibility is to summon the fire and police departments. They are needed to protect the public and surrounding property.

(D) After fire department and police have been summoned (as indicated in Item B), the driver should then warn the public.

Safe Driving Rules

21. All safe driving rules should be observed.

22. All legal driving regulations must be observed.

Investigation of Accidents

23. Each accident should be investigated to find the cause (an unsafe practice or unsafe physical condition of the equipment) and prompt action should be taken to remove the cause and thus avoid a repetition.

Safety Activities

24. Management should appoint



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Both products, the QUICK FILLER VALVE and the VAPOR RETURN VALVE are made of the finest brass and designed for safety with extra strength where the stress comes—stress of accidental shock loads, or abusive handling.

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some responsible person in the organization to direct all safety activities such as (1) investigation of accidents, (2) scheduling and routing vehicles to avoid congested areas and minimize road hazards, (3) road observations to determine whether or not drivers are following out instructions in the safe operation of vehicles and delivery of products, and (4) the training and education of drivers in safe practices. The educational program may include holding periodic meetings of supervisors and drivers, the showing of motion pictures or sound slide films, the distribution of pertinent literature, display of safety posters, safety contests and safe driving awards or other similar incentives.

Conclusion

Safety in the transportation of the liquefied petroleum gases is paramount. All safety rules should, therefore, be observed by management, supervisory staff, and employees.

Dr. Gustav Egloff Honored By War Department

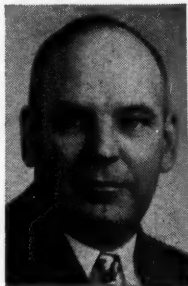
The War Department of the United States has awarded a Certificate of Appreciation to Dr. Gustav Egloff, of Universal Oil Products Co., for his services to the department during the war.

The certificate, which is signed by Secretary of War Robert P. Patterson and LeRoy Lutes, commanding general, Army Service Forces, reads as follows:

"The award is based upon his services pertaining to chemistry and oil refining, and supplying valuable information to the War Department in reports on methods of refining and treating crude oil, gasoline and natural gas."

Colorado Dealers Will Handle Important Industry Problems

When members of the Colorado Liquefied Petroleum Gas Association gather in Gunnison on June 24 they will find a strong program arranged on industry matters of importance.



HARRY TORBIT

Emphasis will be placed upon (1) local Colorado problems; (2) the dealers' responsibility to his customers for safety and service. One of the main objectives of the association

is to maintain industry unity so that legislation and customer relations can be handled more effectively. This, it is believed, will result in a lower accident rate, fuller public acceptance of the fuel and, in the end, greater profits.

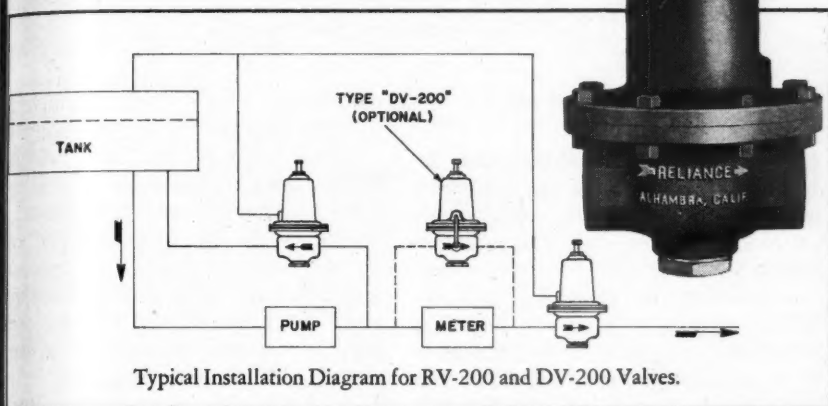
The convention, which is open to members, their employes and families, will be held in Webster Hall, with registrations starting at 8 a.m.

The two morning speakers on the program will be Chas. M. Corken, manager of Corken's, Oklahoma City, whose subject will be "Pumps for the B-P Gas Industry," and T. H. Anderson, Association secretary, who will talk on "Some Problems of Cylinder Operators."

President Harry Torbit, Union Gas & Equipment Co., Pueblo, will discuss "Goals of the Industry in Colorado" at the luncheon meeting and, with the assistance of John Kirkpatrick, Sr., of Walsenburg, will direct an open forum at the afternoon session.

Geo. Cummings, first vice president, is in charge of the arrangements.

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Utilization of LP-Gas By The Natural Gas Industry

By FRANCIS E. DRAKE*

Pacific Gas Corporation, New York City

In Two Parts—Part I

NO PAPER on LP-Gas can be complete without at least a passing glance at the steady advance made by this remarkable product during the past 20 years.

According to the Bureau of Mines' report for 1944, liquefied petroleum gas sales have increased from 403,674 gallons in 1925 to the astonishing figure of 905,600,000 gallons for 1944. In 1945 it is estimated the consumption was well over 1,100 thousand gallons. Such increases are not caused by just "happenstance" but are brought about by true worth.

While the manufactured gas industry has been, perhaps, a trifle lagging in adapting the propanes and butanes, the natural gas companies, particularly on the West Coast, have opened their arms wholeheartedly in accepting this new found friend.

The war increased this acceptance by so greatly loading up the natural gas systems that it necessitated an order emanating from the War and Navy Departments

compelling many critical industries to have emergency LP-Gas service.

Many such plants have been installed but fortunately have not been operated over too extended a period of time. Now that the war demand is over it is of course possible that many of these plants will pass into the discard until such time as natural gas again becomes scarce.

With all due respect to natural gas, the finest fuel in the world, man-made conveyers of this product extending over thousands of miles have a faculty of doing two things:

1. Having a line break at some out-of-the-way place where it may take hours to find and many more to repair, or
2. At crucial periods, usually on the coldest days of the year, becoming inadequate in size for the volume of fuel required.

If the natural gas utility industry uses the foresight and initiative it has exercised in the past generation, it will not permit LP-Gas industrial augmentations to pass out of existence. It will see to it that it remains in service, through proper rate adjustments if need be, for break down, cut off,

* A paper delivered at the spring meeting of the Natural Gas Department of the American Gas Association, Cincinnati, May 7-8.



Winners of the *Magic Chef* Design Competition

THESE WINNERS of the Magic Chef design competition have contributed greatly to Magic Chef's continuous search for the ultimate in gas range design and convenience:

GRAND PRIZE—\$5,000

Product Design Associates, New York, N. Y. Front row, left to right: Miss Taina Waisman, Miss Marie DiBari (independent designer), Miss Read Weber. Back row, left to right: Mr. Sidney L. Katz, Mr. Victor Elmaleh, Mr. Jos. Blumenkranz. Product Design Associates also won 3rd prize \$2000, and 6th prize \$1000.



FIFTH PRIZE— \$1,000

Lt. Com. W. R. Holt, U.S.N.R.



The American Stove Company wishes to thank the many contestants who submitted entries for this design competition. Only the outstanding competence of the judges made it possible to select the winners from the hundreds of splendid entries we received.

LEXINGTON, N.Y.C. SECOND PRIZE— \$3,000

Mr. Roger G. Spross, New York, N. Y.



FOURTH PRIZE—\$1,000

Mr. Bert L. Bassuk, Brooklyn, N. Y.
Mr. Martin Glaberson, N. Y., N. Y.



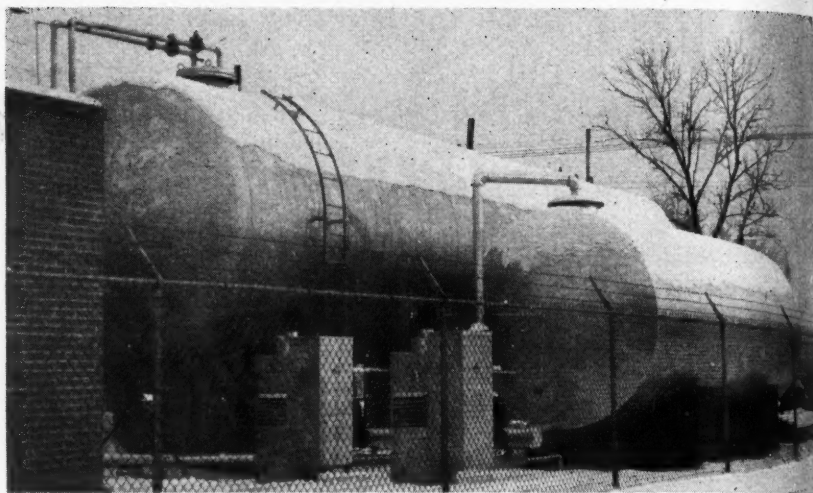
Magic Chef

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THE GAS RANGE WITH THE FAMOUS RED WHEEL

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Installation at Mt. Vernon, Ind., of two 5 MCF "Gasairs" which replaced outmoded mechanical-mix equipment.

or peak shaving. Many industries throughout the land must needs maintain auxiliary service in order to enjoy the advantageously low preferential rates accorded them by the natural gas utility.

What better alternative can be had than LP-Gas which, through its natural characteristics, can be substituted without a burner or shutter change by the simple expedient of adding a few extra Btu's. It is possible to have these LP-Gas installations so arranged that without human hand they automatically and positively come into service instantly a predetermined low point in pressure is reached in the transmission or distribution system. To make sure all is well, no constant care and attention is needed, only periodic inspections.

The aim of all gas men, natural

and manufactured, is to maintain a uniform flow through their lines, winter and summer, night and day. The natural gas company with its extremely low heating rates coupled with the high Btu value of its product is put on the "spot" and is penalized during the winter months by the terrific peak built up through the heating load.

To offset this, some transmission companies have established peak shaving rates based upon the maximum day of the year. These rates credit a utility that keeps a peak shaving plant ready and uses it for reducing those high days to a more normal level.

All such peak shaving plants other than LP-Gas require trained labor available all months in the year for possibly six to twelve day's operation. A high investment

which in turn means high depreciation is also necessary with other than LP-Gas augmentation.

Carburetted and oil gas augmentation will in total cost run from \$160 to \$250 per MCF of daily capacity while LP-Gas can be installed for from \$20 to \$40 per MCF of daily make.

LP-Gas Has Cost Advantage

Here on the face of it is a reduction in first cost which provides LP-Gas with a terrific head start over other augmentation. This coupled with the fact that with other types of gas plants, labor and maintenance are high, gives LP-Gas with its no labor and low maintenance an advantage impossible to overcome in this day of high cost, inefficient labor and rapidly increasing fuel costs.

Some gas companies who have changed over from manufactured to natural gas have available water gas sets for use in emergency, but if a company changing to natural gas does any kind of a selling job they more than double their cubic foot output in spite of the increased Btu's of the natural gas supplied.

This means then that such a company must make additional plant changes and investment of not less than \$120 per M of daily gas made and more often this figure will run to over \$160 if an entire plant is required.

As everyone well knows, a water gas operation of any magnitude requires from 20 to 40 experienced men available at all times. A plant must be kept under fire during

those months when peaks are likely to occur, have steam up on the boilers and heat in the water gas machines. This requires materials and labor and is costly.

Propane-air plants can be all automatic, only pilot lights burning, consuming but little fuel, and ready to cut in instantly when the gas main pressure drops below a predetermined point. No experienced labor need be around to cut them into service.

At \$120 per M daily make, water gas for augmentation purposes would cost \$1,200,000 for a 10,000 M per day plant. If an entirely new plant needed to be built the lowest figure that could be expected would be \$160 per M or \$1,600,000.

Interest Would be High

Twelve percent for interest and depreciation on the foregoing would be but nominal and mean an annual expenditure of \$144,000 and/or \$192,000 respectively. If a plant is only required for 12 days a year to deliver 120,000 MCF, here is a cost of \$1.20 per M and \$1.60 per M of gas made for interest and depreciation alone.

A propane-air gas plant on the other hand at \$40 per M daily gas made would cost for a 10,000 M plant but \$400,000 which at 12% interest and depreciation would have an annual charge of but \$48,000 or based upon the same 12 day annual output of 120,000 MCF would mean but .40 M of gas made.

With water gas, usually a 1100 Btu gas will substitute for a corresponding natural gas but with propane-air gas more often a 1300

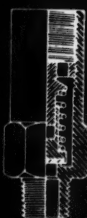
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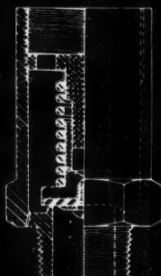
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R-2852

1 1/4" IPS

AREA .72 sq. in.



R-2853

1 1/2" IPS

AREA 1.327 sq. in.



R-2817

2"x2" IPS

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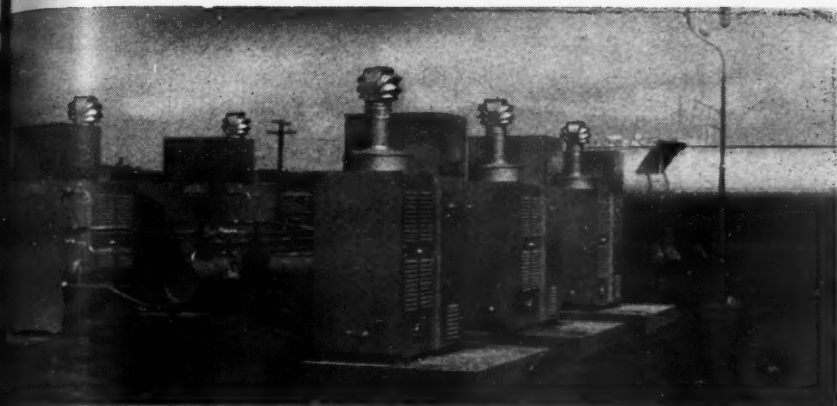
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During the war Camp Roberts, Calif., had five 10 MCF, 1600 Btu, propane-air units which were in operation continuously.

gas will be needed in substitution for a 1050-1100 Btu natural gas.

I have a record of four industrial establishments where in 1942-3 1300 Btu propane-air gas was installed as breakdown service. These units have cut in at least six times each year since and carried on the service without interruption and without a single appliance adjustment. One other installed in 1944 has each year since cut in two times with a 1300 Btu propane-air mixture. The natural gas replaced in these instances had a Btu value from 1000 to 1100.

Butane-air with its heavier gravity requires more Btu for substitution. A record of 28 plants having no appliance adjustment and installed from 1941 to 1944 shows a record of having cut in and supplied substitution from 3 to 6 times each year; 15 of these 6; 12 four times; one three times. In each of

these instances 1600 Btu was required.

It has been the experience of our organization that straight propane-air gas of 1300 Btu is usually a good substitute for from 1000-1100 Btu natural gas but that if normal butane plus some iso-butane is used the Btu's must be increased to 1500-1600. As the propane content of the mixture used for substitution increases, so does the Btu required decrease.

The relative cost of operating propane-air gas when compared to natural gas is of course high but the gas man schooled in the tradition of his industry will go to any extreme and expense to always "keep gas on the town."

Water gas substitution may be slightly less expensive from a straight "holder cost" standpoint, but when one takes into account the interest and depreciation plus

standby losses the seeming advantage quickly disappears.

Let us compare a water gas vs. propane-air gas operation for an assumed company sending out 10,000 M cubic feet of 1000-1100 Btu natural gas per day and having a 12-day substitution required each year. With water gas the same corresponding Btu will be satisfactory and require 11-12 gallons of light gas oil per M of gas made. The fuel will run somewhere between 20 and 30 pounds per M, depending upon quality of coke used.

The labor which must be kept available for operation on 24-hour notice is considerable and would require a minimum of:

Gas makers	3
Gas helpers	3
Fuel handlers	2
Boiler firemen	3
Engineers or exhauster tenders	3
Clinkers	8
Maintenance men	1
Laborers	4
Plant foremen	3
Plant sup't.	1
Total	31

The above plant labor requirement contemplates only covering the three shifts necessary for occasional plant operation. It has no seven-day plant coverage which would be needed if continuous operation was called for. These men must be available however, usually upon 24 hour notice and in the meantime fuel must be wasted in the boilers and water gas sets to maintain heats for a reasonably

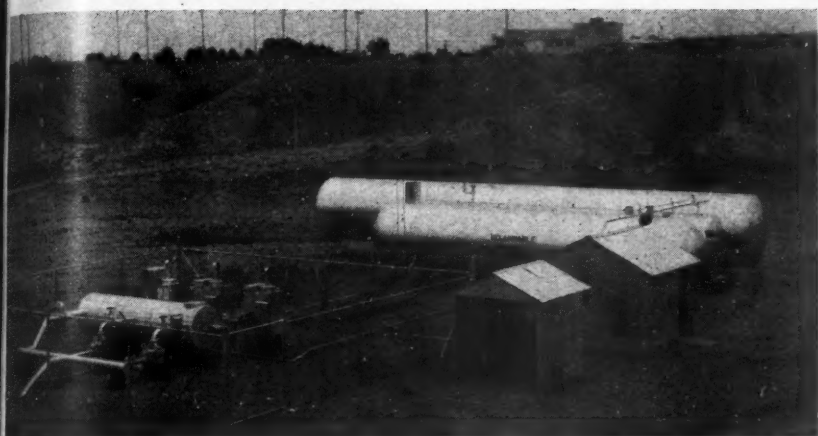
quick start up, when the load dispatcher forecasts an appreciable drop in temperature.

A propane-air gas plant such as I have in mind sits on some vacant plot of land with no boilers, only a nest of propane storage tanks. The number to be determined by the requirements. Only a pilot burns under the vaporizer. The machines are set so that as the load comes on to the system and the demand becomes too great causing a pressure drop, they automatically cut into service and operate only so long as the demand is present. When the load drops the machines again automatically cut out and no further propane consumption takes place other than for the pilot light.

In small low pressure installations no labor is required other than an alarm system in some employee's home or a man dropping in for general inspection a couple of times a day. In larger installations like the 10,000 M per day mentioned previously, undoubtedly it may be desirable to have three men on duty, one on each shift. These men, however, do not necessarily need to be highly experienced but can learn all they need know in a very few days.

The labor cost on such an installation is therefore negligible. If however, 100% or even 50% natural gas augmentation is contemplated, 1300 Btu propane-air gas must be arranged. This will require 14 gallons of propane per MCF of 1300 Btu gas made.

With the above facts in mind let us see what are the relative



At Needles, Calif., the installation consists of two 5 MCF per hour and one 10 MCF per hour "Gasairs" supplying 900 Btu, butane-air gas.

costs of water vs. propane-air gas substitution and/or augmentation, as shown in Table I.

TABLE I

	Water Gas: 1100 Btu.	Propane-Air Gas: 1300 Btu.
Daily capacity	10,000 MCF	10,000 MCF
12 day make	120,000 MCF	120,000 MCF
Plant cost:		
@ \$160.00/M	\$1,600,000.00	
@ \$40.00/M		\$400,000.00
Fixed charges		
@ 12%	192,000.00	48,000.00
Fixed charges *per M	1.60	.40
Gas Cost:		
Fuel 20¢/M		
@ \$10.00/ton	.10	
Propane		
14 gal./M @ 7c		.98
Oil 11 gal./M		
@ 6c	.66	
Labor	.05	.003
Maintenance	.02	.001
Cost/M	\$ 2.43	\$ 1.384

Saving propane-air vs. water gas \$1.046 per M gas made. Saving

to the assumed plant delivering 10,000 MCF per day and only required 12 days in any one year would be 10,000 M x 12 x \$1.046 = \$125,520. This represents a 30% return on the propane-air plant investment of \$400,000.

I have endeavored to be conservative in the foregoing figures and have used costs that I know are comparable. Each of you can well apply fuel, oil, labor and propane costs applicable to your individual section of the country. Some of you will find higher and some lower costs than those quoted.

Many of you manufactured gas operators who have converted to natural gas will say "We have the water gas plant investment already made so why consider 'fixed charges.'" To such of you, I say "yes," and that your "interest and depreciation charges" are always present and must be cared for

Another "Safety First"

BY REGO

The RegO No. 3118 Unloading Adapter may be used to unload liquid from any container which is provided with a dip pipe for the filling connection and which is equipped with any of the following RegO Valves:

MULTIVALVE Nos. 2418 and 2550.
COMPACT UNIT No. 2486.

Quick Filler and Back Pressure Check Valve Nos. 3178 and 3178C.

Also any quick filler valves which have $1\frac{3}{4}$ "-6 Acme threads (such as RegO Nos. 2186, 2916, 3174 or 3174C), and which are installed without supplementary back pressure check valves.



SPECIFY THE REGO No. 3118 UNLOADING ADAPTER AS STANDARD EQUIPMENT ON EACH BULK DELIVERY

REGO No. 3118
Unloading
Adapter

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ards to Operators Are Now Eliminated ing Unloading Operations!

positive action of the New RegO No. 3118 Unloading Adapter now makes it safe and practical to pump out LP Gas storage containers right at the user's premises. Operators are fully protected as all possible chance of free-discharge to atmosphere is eliminated.

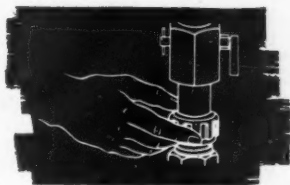
Simple Step-by-Step procedure for using RegO No. 3118 Unloading Adapter:

The unloading adapter is coupled to the filler valve on container to be emptied, and truck hose is connected to the adapter.

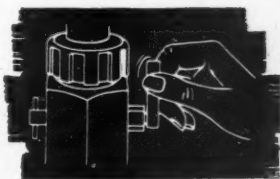
Operating lever is turned, actuating stem which holds the filler valve open. Container is now ready to be pumped out.

After unloading is completed the operating lever is returned to its original position, permitting valve to close.

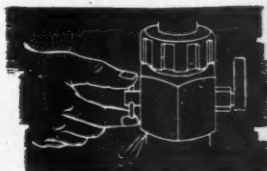
Shut-Off Valve on hose is closed and bleeder valve is opened to release pressure confined in adapter body.



Quick connection of adapter to filler valve and of truck hose to adapter.



Turning lever on adapter opens filler valve.



Open bleeder valve determines whether valves are closed before hose is disconnected.

REGO

LP GAS EQUIPMENT

The **BASTIAN-BLESSING** Company

4201 W. Peterson Ave.

Chicago 30, Ill.

No. 3118
Unloading
Adapter

DIN AS
ELV WICK!

somewhere on your books. If the plant is maintained as a standby for the natural gas operations, the fixed charges must of necessity go to that phase of operations to which it is related, namely, "gas making."

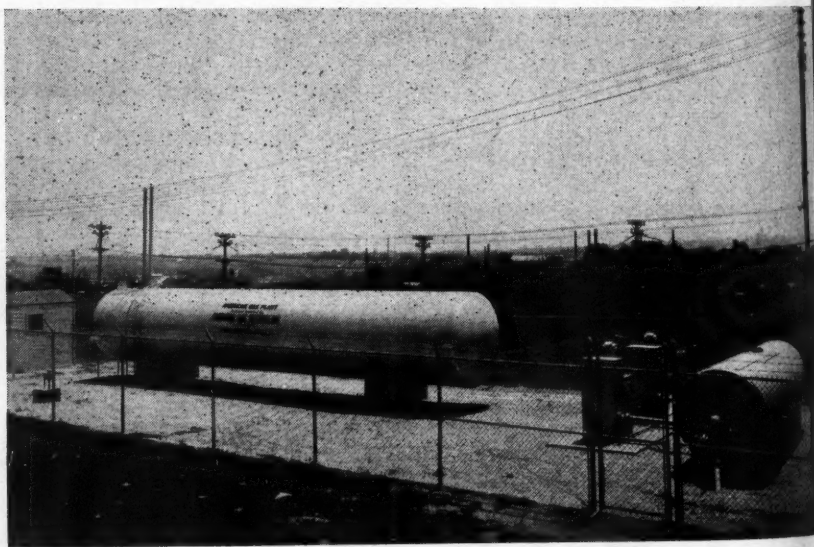
For a straight natural gas operation to make a water or oil gas plant investment for supplementation would of course require the fixed charges applied without question directly to supplementation.

Peak Shaving

For "peak shaving," with many of the natural gas pipe line rates

in force, it is a simple matter of arithmetic to determine each individual company's possible savings by the utilization of propane-air and its minimum investment as well as positive automatic operation.

Many of you will be surprised at the big return you can make with a propane-air plant investment. It may in some cases in small operations mean the difference between "profit and loss" as did the change in freight rate on LP-Gas in the Southern section of our country some few years ago.



The butane and propane storage and gas plant at the Laister-Kauffman Aircraft Co., St. Louis. Compressor house for tank car unloading and truck loader shown at left; 18,000 gal. tank; two gas-air machines, capacity 10,000 cu. ft. each.

CURRENT READING

• Reviews of new books, pamphlets and articles published in recent magazines of interest to technicians and executives in the liquefied petroleum gas industry. Those interested in reading any complete article or book should write to the publications named.

Information Circular—by G. M. Kintz. U. S. Department of the Interior, Bureau of Mines. Some information on the causes and prevention of fires and explosions in the petroleum industry.

Encyclopedia of Hydrocarbon Compounds, compiled by Joseph E. Faraday, Ph.D. Published by Chemical Publishing Co., Inc., 1946.

This first volume contains information on molecular formula, structural formula, occurrence in nature, names of the compound, all known methods of preparation with complete bibliography. It also describes the methods of detection and determination, physical constants, and outstanding properties and reactions, in addition to dealing with hydrocarbons containing one to five carbon atoms.

The encyclopedia is published in loose-leaf form so that each year the annual issue of new sheets available may be inserted in the proper order for keeping the volume up-to-date. Other volumes will follow at short intervals.

The book's prime purpose is to facilitate research by chemists who, in

seeking new discoveries, must know what has already been done in the field. It is a quick source of information for those who must know the many different methods by which one and the same compound can often be prepared from the great number of organic compounds and who would save endless search through numerous journals and books. The price of Volume I is \$15.

Plant Additions Increase Butane Recovery—F. H. Love. "Petroleum Engineer," April, 1946, pp. 51-54. Latest additions to Continental Oil Co.'s interconnected plants in the K.M.A. field, Wichita County, Texas, were made primarily to increase butane extraction, the secondary result being an increase in the percentage of casinghead gasoline recovered. By the addition of certain equipment, a better than 90 per cent butane recovery has been effected. The additions are described.

Piping Carbon Dioxide for Fire Protection—W. W. Voss. "Heating, Piping and Air Conditioning," April, 1946, pp. 73-79. Quick distribution of liquid carbon dioxide from a large central source of supply under uncommon combinations of pressure and temperature conditions is a vital industrial service in which piping plays an important part. In this article the author describes the layout, installation, specification, testing, etc., for such process piping. The type of

pipng layout developed for this application has contributed measurably to the reliability of fire protection by means of low-pressure carbon dioxide systems. Safe and certain fire protection of valuable or hazardous storage or processing relieves much risk and insures against costly loss of equipment, material, and irreplaceable production time—and it saves lives.

Modern Fire Protection Training—R. Sneddon. "Petroleum Engineer," April, 1946, pp. 68, etc. This article outlines the course of training as given by Union Oil Co. of Calif.

How to Drive a Truck—J. W. Sinclair. "S.A.E. Journal," April, 1946, pp. 200-204. Employers of truck drivers have an important and sometimes difficult job in training their drivers to conserve the vehicles they use. One approach to this problem of training drivers to their responsibilities is presented by the author, who sets forth and elaborates on a series of "don't's" that drivers should diligently and persistently practice.

Averaging Liquid Level Control—J. G. Ziegler. "Industrial and Engineering Chemistry," April, 1946, pp. 360-364. A logical method is presented for determining such factors as the required feed tank capacity, the type of instrumentation required, and the probable instrument settings for specific continuous process installations of averaging liquid level controls.

Simplified Design for Precise Fractionation of Light Hydrocarbons—F. H. Stone. "Petroleum Refiner," April, 1946, pp. 124-128. Design of equipment for separation of sharp cuts of any of the lighter hydrocarbons does not vary a great deal. The

described method has been proven satisfactory in a number of cases dealing with the separation of isobutane and normal butane, and isopentane and normal pentane. Special cases may require additional control equipment. The economics of a proposed installation will influence the results to be sought and, therefore, the calculations for obtaining these results. However, the fundamentals of the design for fractionators to make precise cuts are quite well established, and the methods and procedure are not particularly complicated once these fundamentals are understood.

Modern Refining Processes: How Effective Is Your Program of Safety Inspection?—G. Armistead, Jr. "Oil and Gas Journal," April 20, 1946, pp. 150, 153. Article 7. Periodic inspection of refinery equipment is made for two purposes: to discover the condition of the equipment and to make records to show rate and history of deterioration and time of replacement. Standard procedures are arranged which are calculated to detect weaknesses with reasonable certainty. Older processes have developed well-standardized inspection procedures from long experience, newer processes must develop these methods further. Inspectors must be well trained and experienced, aware of their heavy responsibility to the plant. In many cases extremes of detail in inspection will be repaid by the avoidance of disaster.

Comparative Thermal Values of Various Fuels Based on Their Respective Units of Weight or Volume. "Power Plant Engineering," April, 1946, p. 110. A table is shown giving these values for natural gas, coke oven or city gas, blast furnace gas, producer gas, coke breeze, coke, coal, fuel oil, tar, and electricity.

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100% safety
perfect combustion
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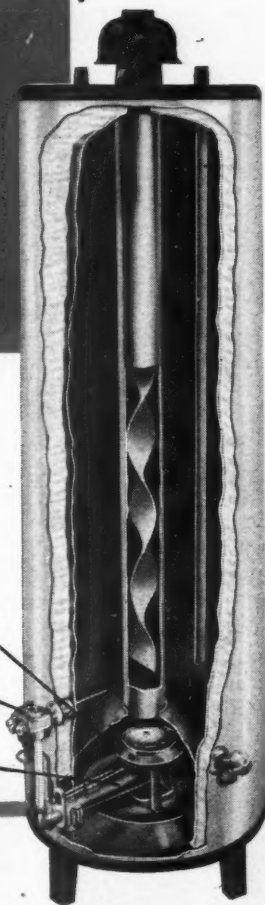
INTERCHANGEABLE
grid burner can be fac-
tory set to meet any gas
fuel requirement.

NEW

100% DUAL CONTROL
shuts off all gas to both
pilot and burner if pilot
light is extinguished.

NEW

HIGH-VELOCITY
burner venturi pro-
vides thorough mix-
ing of primary air;
burns more air, gives
greater efficiency.



Find out about this handsome new Series 30 by Rheem, America's greatest
builder of water heaters. Additional fast-selling features include Rheem hot-
dipped galvanized tank, full 1½-inch insulation, double access doors, and
wear-resistant baked enamel finish. AGA approved. Sizes: 20, 30, 40 gallons.
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Safety is Major Theme of Oklahoma Association Meeting

By O. D. HALL

GREATER safety and efficiency in handling liquefied petroleum gases was the central theme of an all-day meeting, May 7, in the House of Representatives, state capitol, Oklahoma City, Okla., when more than 200 manufacturers, dealers and distributors of these products attended. State Fire Marshal T. J. Ellis who planned the meeting in connection with the recently organized Oklahoma Liquefied Petroleum Gas Association, expressed gratification at the large industry representation.

Following the delivery of a paper by Mr. Ellis on the new B-P Gas rules and regulations, a general discussion, led by G. L. Brennan, Tulsa, and a talk by John Knox Smith, Bartlesville, the meeting was

turned over by Mr. Ellis to Oklahoma Liquefied Petroleum Gas Association, which conducted it the remainder of the day.

The state fire marshal explained some of the more important features of the new regulations, called attention particularly to sections relating to B-P Gas transportation trucks. He asked that industry and particularly refiners familiarize themselves with the regulations and see that they are enforced. Refiners under the law cannot fill a tank unless it has been inspected by the state fire marshal's office and the driver carries a No. 1 authorization card.

"If the driver must have gas on a particular trip and he has suitable and safe equipment, and the driver does not have the authorization card with him, the refiner may telephone the fire marshal's office, and seek permission to fill the tank in this instance but such procedure must be repeated," said Mr. Ellis.

Frank De Larzelere, Southern Equipment Co., Tulsa, in a talk on regulations governing type and construction of consumer and storage tanks, expressed approval of the state's U-69 ASME code requirements. "We have our ICC containers which are under the Interstate Commerce rule as far as transportation from one edge of the state through the state is concerned," he said. "These range from 20 lbs. up to 400 lbs."



Left to right: John Knox Smith, Phillips Petroleum Co., and A. H. Menuet, Skelly Oil Co.

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Board of directors, Oklahoma Liquefied Petroleum Gas Association, in session at the state capitol. Left to right, around table: J. L. Grigaby, American Butane & Propane Gas Co.; C. O. Whisnand, Whisnand Inc.; Francis Borelli, Borelli Hardware Co.; Carl Ticer, association president, Ticer Butane Inc.; Lewis Hughes, Oklahoma Automatic Gas Co.; J. O. Green, Oklahoma Liquefied Gas Co.; Claude G. Berry, Eastern Butane Consolidated; Fred L. Yates, executive secretary of the association. Dewey Wood, who also attended this directors' meeting, was not present when the picture was taken.

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as, and in some cases as high as 1000 and 1200 water gallons. In the next group are underground butane and underground propane containers, and aboveground butane and propane containers and propane and butane containers for storage facilities. I am glad that the state of Oklahoma sticks by the National Board of Fire Underwriters ruling. I think it is extremely safe."

The speaker explained that the design working pressure of aboveground storage containers ranges from 80 lbs. up to 100 lbs., 125 lbs., 150 lbs., 175 lbs., and 200 lbs. On underground containers there shall be added, as a corrosion factor, to the calculated wall thickness, additional metal of 1/32-in. thickness provided that the shell or head thickness of any con-

tainer shall not be less than 3/16-in. Aboveground or underground containers cannot be filled with fuel above the manufacturer's pressure marking.

Mr. De Larzelere stated that under the regulations the installing dealer who is properly qualified, may do his own assembling provided he forwards to the state fire marshal a print or design of his system showing that he has adequate facilities and is well versed in putting in the necessary fittings and protective devices. Or, as another method of making installations he may buy complete units from some of the suppliers who meet requirements of the state fire marshal's department. The dealers were warned against purchasing or placing any equipment which is sub-standard and not properly approved. Mr. De Lar-

zelere spoke in place of Leslie Olson, Black, Sivalls and Bryson engineer, who suffered a heart attack and died a few days before he was scheduled to appear on the program.

Requirements in the new Oklahoma regulations are minimum, declared G. L. Brennan, Warren Petroleum Corp. "But we should use good engineering on layouts and arrangements. Another 10 ft. of distance between operating units in a bulk plant makes a great deal of difference in the degree of safety in the operation of that plant. Too often operators are inclined to bunch equipment closely together merely to save a few feet of property. It is protective and economic to spread out the plant and it will pay good dividends," Mr. Brennan counseled. He said that the industry is progressing in many ways. Better steels are being developed and new techniques of welding have been devised; thus, the industry should be

constantly on the alert for improved methods and regulations.

During a general discussion which followed, led by Mr. Brennan, it was brought out that U-201, a war emergency regulation, has been set aside by the state of Oklahoma. It provided for 4 to 1 safety factors instead of 5 to 1.

Howard Simms, Black, Sivalls and Bryson, Oklahoma City, explained paragraph U-72 concerning double welded butt joints and expressed doubt whether under the manual process complete penetration can be secured if the operator does not check the second side of the weld.

The only way any one can safely handle liquefied petroleum gas is to know the fundamental nature of the gas and what to expect of the product when it is handled under certain conditions, J. O. Green, Oklahoma Liquefied Gas Co., Seminole, told his hearers. First the dealer or handler should



Left to right: L. F. West, inspector, state fire marshal's office; Tillman Terry, Hockaday Hardware Co.; Walter Choate, chief inspector; P. S. Gilbert, Gilbert Plumbing & Elec. Co.

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There's No "Shooting in the Dark"
with

UNIVERSAL "L-P" GAS RANGES

This is important:— "L-P" GAS is not just something tacked onto the tail of Universal's engineering and sales promotion planning. It's a separate, integral part of our programs.

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know the vapor pressure of the gas under certain temperature conditions and the working pressure of the vessel he is filling. While practically all refineries make a 98% pure product, Mr. Green declared that the vapor pressures of butane and propane mixtures coming from different blends vary considerably but not enough to make an appreciable difference in the quality of the gas.

John Knox Smith, Phillips Petroleum Co., Bartlesville, formerly an engineer with the Texas Commission, warned operators not to change or tamper with safety valves or their settings unless qualified to do so. If there were any doubt about qualifications, the device should be sent back to the factory or turned over to someone designated by the manufacturer as qualified to make adjustments.

Explaining other Oklahoma safety regulations, Mr. Smith said that all liquid must be removed from the tank before it is taken out of the ground and removed to another location. Piping leading to the excess flow valve should not be less than the capacity of the valve and such valves should be protected in some approved way from being stopped up by sand or dirt.

The aims of the Oklahoma Liquefied Petroleum Gas Association were explained by Carl Ticer, Woodward, Okla., president. One of these aims is to increase the demand for the products. Others are to find solutions for the problems of the industry and to bring all elements into harmonious working relations with the object of elevating standards and efficiency.

Fred L. Yates, recently appointed executive secretary of the association, outlined a program for the association which includes promotion of greater safety, improved relations be-

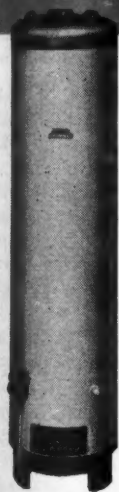
tween employers and employees and with the public; adoption of an insignia which will be placed on equipment and in offices of members; to conduct research to develop more efficient methods and new outlets for fuel; to set up fellowships in leading educational institutions of the state; to study causes of accidents, reduce them to an absolute minimum and see that (the causes once determined) a similar accident does not happen again; to issue annual safety awards to B-P Gas truck drivers and other employees who attain certain safety standards; eliminate unfair trade practices; adopt a code of ethics and increase business through exercise of higher standards and through advertising and publicity campaigns. Closer cooperation with state and federal agencies, and working out a solution of insurance problems are among other objectives mentioned.

Primary rules in the Oklahoma safety regulations were outlined by A. H. Menuet, Skelly Oil Co., of Kansas City. He warned installers to use the right sizes of pipe for given jobs and that reducing such sizes below safety or efficiency requirements saves very little money and may result in dissatisfaction and possible unnecessary hazards. He advised inspections of systems installed in public buildings, particularly in schools at least once a year. He said that securing such inspections was the responsibility of the superintendents of public schools.

State Fire Marshal Ellis stated during the discussion that Oklahoma regulations require regular inspections of public buildings and



"UNITED STATES" the *Water Heater* of **AMERICA'S** *Post War Homes*



NEW developments in thermostats, safety pilots, burners, tanks, design and methods of fabrication and assembly are now being perfected, which will assure consumers and dealers of maximum quality control in every new Model U.S. Water Heater. Models for every purpose including homes, and high volume recovery models for commercial and industrial application are manufactured completely under the same management, which assures complete integration of all components and absolute control of design and application. This is an accomplishment of war-time engineering which will provide peace-time comfort to thousands of post-war homes throughout America.

"United States" L-P Gas Water Heaters are equipped with our new No. 16-100 Safety Device which operates to close both burner and pilot simultaneously.

Rugged design, sensitive operation, durable construction, unfailing action.

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133 EAST PALMER AVENUE, COMPTON, CALIFORNIA



cooperation of the industry in reporting to the state fire marshal any unsafe condition coming to its attention.

Servicing of customers installations and appliances was declared to be a most important job by Paul Staude, of Loyal, Okla. "We do a great injustice to our business if we do not install the very best equipment," said Mr. Staude. "I have noticed that most of the companies which have made poor installations are no longer in business." He condemned the "ice

pick" method of enlarging openings on appliances or using hammers to reduce openings. He urged the use of proper tools in adjusting or servicing appliances and declared that it is a good policy to discuss in advance with the buyer his complete installation, tell him as much as possible about the functions and proper use of appliances, then follow through with prompt service of his system so that there will result a minimum of trouble with customers.

War-Time Fire Extinguishers May Need Replacement

NOW that standard fire extinguishers are again available, those responsible for fire protection would do well to examine old and "emergency approved" extinguishers for possible replacement, particularly if equipment has not been frequently inspected and serviced, says the Safety Research Institute of New York City.

Many an extinguisher that deserved retirement was kept in service during the war years because new extinguishers were available only to high priority holders. Where first aid fire protection had to be expanded, even priority holders often had to be satisfied with "emergency approved" extinguishers.

The spirit in which emergency approval was adopted is indicated by the following statement from Underwriters' Laboratories, Inc., made when the development of substandard equipment became necessary:

"National preparedness and defense, and now wartime controls of critical materials, have required use of various substitute materials and methods, some of which may not be acceptable after Victory, their replacement becoming a necessary part of the cost of war."

The inspection department of the

Associated Factory Mutual Fire Insurance Companies now advises Factory Mutual members, in its May 1946, bulletin, as follows:

"During the war and consequent curtailment of critical materials, certain substandard fire protective equipment was manufactured as an emergency measure. Now, standard equipment is coming back on the market, and purchasers should call for devices with full Factory Mutual approval in making future purchases."

Standard extinguishers bear the Factory Mutual approval insignia (the letters "F.M." superimposed on a diamond-shaped design) and the Underwriters' Laboratories' label, which reads "Underwriters' Laboratories Inspected" and gives the serial number of the label and information regarding the classification of the extinguisher.

The models made of substitute materials which meet the "Emergency Alternate Specifications" of the laboratories bear the usual approval indications, the letters "EAS," and in the year the equipment was manufactured. EAS approval indicates that the unit on which it appears may require more careful maintenance and may not stand up as long as the standard types.

Will Spread Gospel for Butane-Propane Gas

AN ambitious program designed eventually to make liquefied gas available through their organization to 187,000 members of the Southern States Cooperative was launched early in April. Two of the organization's six wholesale warehouses began at that time to handle propane under the trade name of Farm Family Gas.

The Southern States Cooperative, organized in 1923, is an organization of agricultural producers in the states of Delaware, Maryland, Virginia, West Virginia, and Kentucky. Their greatly expanding activities now embrace not only the cooperative marketing of their members' produce, but also the distribution of a great variety of farm supplies and equipment.

Six wholesale warehouses are maintained in Baltimore, Norfolk, Richmond, Roanoke, Clarksburg, and Louisville. Retail activities are conducted through 77 farmer-owned outlets operated under managerial contract by the Southern States Cooperative. In addition to the retail outlets or cooperative stores, there are also about 800 privately owned cooperative service agencies which operate under Southern States franchises.

Experienced in Other Lines

While the handling of gas and gas appliances will be a new venture to most, if not all of the retail outlets, many of them have had long experience in distribution, servicing, and maintaining such electrical equipment as refrigerators, pumps, milk coolers, etc.

All of the retail outlets dealing in machinery or equipment employ servicemen schooled in the care of the

machinery or equipment that they are called upon to service. Some 80 of these servicemen have, for the past three months, been undergoing intensive schooling in the installation and care of gas appliances and equipment.

Actual service to consumers was scheduled to be initiated about April 15 in the countryside immediately adjacent to Baltimore, Maryland, and Richmond. Until the location and size of the necessary bulk stations has been decided upon, cylinders will be filled for the Cooperative by the suppliers of propane. It is anticipated that by the end of 1946 80 gas operators will be supplying fuel to members of the local retail outlets.

Dual Cylinder Installations First

The first installations will be of two-bottle, non-metered systems, but ultimate standardization will be decided on the basis of experience now being gathered.

Under Federal law, in order to claim tax exemption, cooperatives must do 50% of the total volume of their business with members, and 85% of that volume with producers of agricultural products. This means that their activities are concentrated almost entirely with farmers. The traditional cooperative price policy is to distribute at the going market price in the locality for any commodity handled. The savings to cooperative members is reflected and paid out annually in the form of a refund known as a "patronage refund".

The Southern States Cooperative is already circulating its large mailing list, advising them that Farm Family Gas is to be made available and enclosing with the circular a rate card to those interested in installing the service.

American LIQUEFIED PETROLEUM GAS EQUIPMENT



Distinctively Designed
for STORAGE AND
TRANSPORTATION
Service

AMERICAN PIPE & STEEL CORPORATION
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IF YOU ARE INTERESTED IN **LPG** STORAGE OR TRANSPORT EQUIPMENT

- - - you will want this attractive, illustrated brochure describing American LPG Storage and Transport Equipment.

American Storage and Transport Equipment is made in accordance with API-ASME or ASME Codes. Most items are made in mass production in sizes which will handle the majority of requirements.

For your copy of the new American brochure, address your inquiries to:

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QUIZ

Types of Water Heaters

• This department is a monthly feature to stimulate thought and to give operators basic industry facts. Clip out for your notebook or file in a standard, 3-ring, loose-leaf binder. Sources of information: *The Bottled Gas Manual, Handbook Butane-Propane Gases.*

Questions

Answers

1

What are the types of gas water heaters?

Full automatic storage tank heaters, side arm heaters, automatic coil heaters and immersion heaters.

2

What is the most satisfactory heater for use on B-P Gas?

The full automatic storage type because it functions well and economically and provides hot water whenever needed, day or night.

3

What is known as a booster heater?

For large commercial installations where there is liable to be high peak demands, a large, insulated water storage tank is installed and one or more automatic heaters are installed that keep the temperature in the large tank at the proper level.

4

Can automatic storage tank heaters be used as boosters?

In B-P Gas operation the automatic storage tank heater is preferable to other types and can be used by providing large inlet and outlet connections for circulating to the large auxiliary tank. The thermostats on the water heater control the temperature.

5

What is the use of the immersion heater?

Gas fired immersion heaters are used in process industries to maintain liquid temperature. They consist essentially of a tube or tubes immersed in the tank to be heated and fired by gas burners directing the flame into the end of the tube. Products of combustion are vented from the far end through a stack.

6

What is a side arm water heater?

A side arm water heater is a small coil type heater attached to a water storage tank and used as an auxiliary heater or for non-automatic heating of water.

7

Why has the side arm heater lost its past popularity?

The side arm water heater was the stepping stone from the use of water backs in coal stoves to automatic gas water heating. The requirements for hot water in the American home have increased so greatly that it requires a full automatic hot water heating system.

8

How is the size of a water heater designated?

The size is designated by tank size and Btu input.

9

What is meant by recovery capacity?

Recovery capacity is rated in terms of gallons per hour and is the amount of water that can be heated from one designated temperature to another higher temperature in one hour's time.

10

What is the advantage in using an oversize water heater?

An oversized water heater will give plus performance at no greater cost to the consumer and with less maintenance and service calls for the B-P Gas operator.

● Selecting, Installing Water Heaters ● Competitive Fuels ● Wood, Coal, Oil, Electricity
● Gas Lighting ● Space Heating ● Tools for Your Kit.

BUTLER  BUILT

Reg. U. S. Pat. Off.

**THE BEST
IN L. P. G. HOME
SYSTEMS
TRUCK and TRAILER
TRANSPORTS**

**WORTH
WAITING FOR!**

BUTLER MANUFACTURING COMPANY

7410 East 13th Street

Kansas City 3, Missouri

Operation of a Regulator

By GEORGE REZNOR

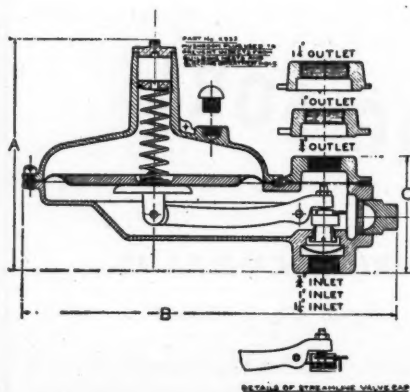
Research Engineer, Reznor Manufacturing Co., Mercer, Pa.

A GAS pressure regulator or governor is "any device for the regulation of the flow of gas."

While attention is generally focussed on pressure control when regulators are being considered, it is well to remember that flow rate is the quantitative element which must be governed. Since pressure is developed by the quantity of gas admitted to a system, it follows that the pressure may be taken as representing the flow.

Consequently, by maintaining control over the pressure, control is thereby maintained over the flow rate as established by the consumption of gas at the points of utilization.

A regulator consists of these



Service Regulator

parts: (1) diaphragm; (2) spring weight or load pressure; (3) valve (4) means of connecting valve to the diaphragm.

The operation of a regulator is very simple.

Assume that the valves in Fig. 1 are open and that gas is flowing through the regulator from left to right with the desired pressure being maintained at the outlet. Next, assume that when an additional burner is turned on, the pressure at the regulator outlet will be lowered, which will result in a lower upward force on the diaphragm than downward force of the spring. The diaphragm moves downward and opens the valve wider.

The greater valve opening will permit the gas to flow through the regulator at a higher rate which will continue to increase until the volume flowing is sufficient to meet the higher demand.

When a burner is turned off, the diaphragm moves upward until the valves have reduced the flow to an amount which develops an outlet pressure equal to the spring.

The fundamental principal of operation of all regulators is the same. The fluctuating pressure causes a change in the position of the diaphragm, which changes the position of the valves. This results in a change in flow rate that

changes the pressure in the conveying system.

Regulator Design and Construction—The details in a regulator design are established by the service to which the regulator is applied.

Diaphragm—When pressures above two or three pounds are encountered, it is customary with natural and manufactured gas* to use a woven duct material impregnated with a rubber composition or rubber substitute material. For the lower pressures, that is two pounds or less, treated sheepskin is employed. Single ply sheepskin diaphragms are suitable for pressures of eight ounces or less. For the range of eight ounces to two pounds it is customary to use two-ply cemented diaphragms.

The diaphragm area is governed by the pressures involved and the accuracy of regulation desired. For sensitive control, a large diaphragm and a minimum of friction in moving parts is necessary.

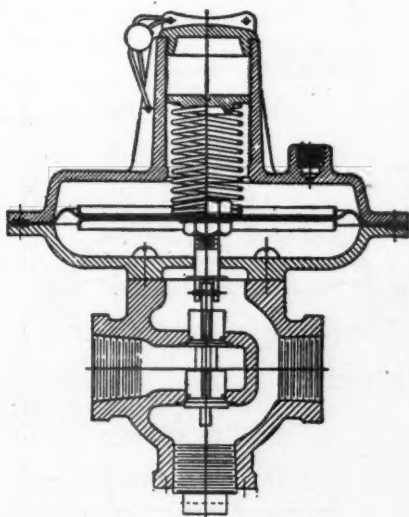
Valves—Hard seat construction is employed when positive shut-off at zero flow is not required. This construction is used primarily when medium and high outlet pressures are used and is acceptable because regulators are installed at some point in the system before final pressure reduction.

For low outlet pressures the soft seat valve design is employed when lock-up or positive shut-off is neces-

sary at zero flow. Such services include low-pressure distribution system regulators and house service line regulators. In the soft seat construction, the valve or valves are fitted with a material which will contact the valve port or orifice in a manner to prevent all flow when the valve is in the closed position.

Body—The body of a regulator is simply a housing for the operating parts. In small regulators, the pipe connections are generally of the threaded type, while flanges are used in the larger sizes.

The most important point in body design is to provide access to operating parts. It is desirable to provide for interchanging of parts because it is frequently necessary to change valve and orifices as well as diaphragms to meet operating



Appliance Regulator—Double Valve

* Diaphragm material for use with liquefied petroleum gas should be of composition that will not dry out or crack.—Editor.

conditions. Smaller regulators, except in the case of house regulators, can be changed readily in their entirety.

Diaphragm Control—The lever and weight type of diaphragm loading is generally employed for medium and high outlet pressures where regulation within plus or minus 10% is acceptable. Direct weight loading is suitable only on low-pressure services of about one pound or less.

Spring loading can be applied for both low and high outlet pressures and is most generally used when it is desired to change outlet pressure settings. Loading the operating diaphragm with pressure is a modern development in regulator design which presents several advantages in both low and high-pressure control. It is generally

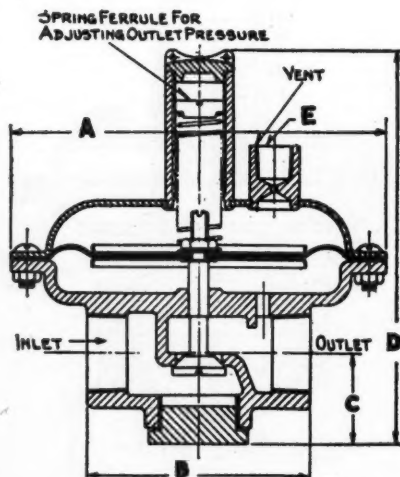
applied to the larger regulators.

Selection of Regulator—The pressure conditions determine the type of regulator, and it is important that the range of both inlet and outlet pressure be considered. The flow rate capacity of the regulator is dependent upon the difference in pressure between inlet and outlet. Calculations for size must be made for the lowest inlet pressure available and the highest outlet pressure desired.

Accuracy of control is dependent upon the requirements of the service. For high-pressure distribution, regulation within plus or minus 10% is considered satisfactory. In low-pressure distribution, a regulator should maintain outlet pressures within a few tenths of an inch water column.

Regulators for industrial services should provide a high degree of accuracy because the processing of many manufactured products require controlled heat input in a very constant amount. Springs must be highly flexible to properly maintain outlet pressures, and the means of adjustment should be convenient because changes in outlet pressure settings are frequently desirable.

Regulators which are used directly on appliances must be simple and rugged in design in order to eliminate servicing and they should maintain outlet pressures within a few tenths of an inch. Listing requirements for domestic gas appliance pressure regulators have been established by the American Gas Association and regulators submitted for listing must meet



Appliance Regulator—Single Valve

definite specifications for construction and performance.

Summary—There are three classifications of regulators from the standpoint of pressure.

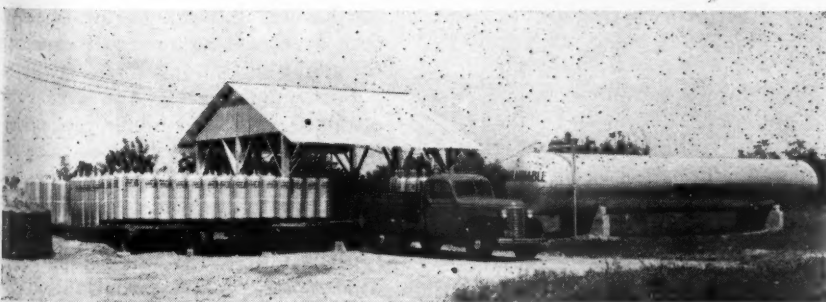
The Appliance regulator, which is usually furnished with each natural or manufactured gas appliance. This regulator is designed for a maximum of 15 in. inlet and outlet pressures from 1.5 in. to 15 in. depending on pressure drop through regulator which increases with the flow rate.

The Service Regulator is used for reducing street pressures to inches for house service. This type is constructed for installation in vertical pipe and employs soft seat construction to provide "lock-up" at zero flow. A mercury seal or similar type of relief valve is employed on service regulators that will bleed off gas in excess of the outlet pressure setting due to improper regulation. Service regula-

tors are classified as medium and high pressure regulators and are usually designed to handle inlet pressures from 6 in. to 150 lbs. and to deliver outlet pressures from 2 in. to 10 in. of water. Liquid petroleum gas regulators come under this classification since at 70° F. propane tank pressure is 124 and butane tank pressure is 31 p. s. i. gage. As a rule B-P Gas regulators are special, employing springs, diaphragms and valve seats to suit the outlet pressures, accuracy of control and resistance to chemical action required for B-P Gas service.

Field Regulators are usually larger in capacity and are used in the field for high pressure reduction in the range of 1000 lbs. to 100 lbs. inlet pressures.

Industrial Regulators are designed for inlet pressures from 2 to 150 lbs. and outlet pressures from 3 in. to 20 lbs.



This is the bulk and filling plant of H. Lionberger, of Woodland, Calif. Capacity: 12,000 gals. of butane, 7000 gals. of propane. Facilities permit filling four cylinders at one time, with a total of 400 cylinders per day.

Furnace Performs Dual Operation

FOR increased flexibility in handling different batch type heat treating operations, a new atmosphere muffle furnace is now offered by Surface Combustion Corp., Toledo 1, Ohio. Due to a new feature of design the furnace can produce the proper atmosphere for gas carburizing, yet also is applicable for general heat treating. (Figure 1.) In addition, all the features of "Surface Char-Mo" heat treating furnaces, including atmosphere and uniform temperature distribution, are provided.

After producing the basic atmosphere, the furnace utilizes a new gas enriching and recirculating system for gas carburizing. (Figure 2.) Instead of circulating all the gas in

the muffle through the enriching system, thus tending to cool the entire amount, only about 10% is removed from the muffle at any time. This gas is continuously withdrawn near the door, and is first filtered to remove any free carbon which may have dissociated from the CO in the atmosphere.

After filtering the atmosphere gas, the enriching gas (raw material gas or propane) is added through a metering orifice. The gas then passes to the recirculating pump, which is of the positive displacement (vane) type. The gas under pressure is discharged at high velocity into a venturi within the muffle, inspiring into the venturi a large volume of muffle gases. These are mixed in the venturi and are discharged to recirculate through the muffle.

Works Double Shift

Indicative of the flexibility of the unit, conversion from a carburizing to a heat-treating atmosphere, and vice versa, can quickly be made without shutting down. Nor is it necessary to shut down for filter cleaning, since a twin filter unit is supplied. In operating tests carried out over some months it has, for instance, been found convenient to use the unit for hardening work during the day, then operate it as a carburizer during the night shift.

For rapid heating the furnace is equipped with over-muffle and under-muffle burners. The time to temperature ranges from 2½ to 3 hours. The heating rate is given below for heating a cold charge to 1700° F. with the furnace initially at this temperature. The rapid rate of carburization obtainable is indicated by the results on SAE 1020 steel, for which the time at temperature of 1700° F. to obtain

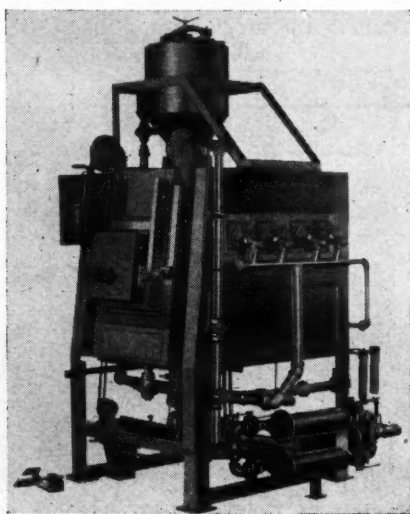


Fig. 1. Carburizing furnace.

case depth of 0.020 is 1 hour, and for 0.070 is 7 hours.

The furnace is available in three sizes, for light or medium batch operations. Inside dimensions are approximately as follows:

Height	Width	Length	Average Heating Rate to 1700° F. Steel—
			lbs. per. hr.
1 in.	12 in.	22 in.	55
3 in.	18 in.	30 in.	110
5 in.	22 in.	36 in.	170

The furnace utilizes a selective double door to facilitate handling pieces of various sizes with least loss of atmosphere. The inner door has a small opening for the insertion and removal of small pieces, whereas both doors may be opened for large pieces. Both doors are of air-lift type, operated by a tilting treadle with manual selector.

The control panel is mounted at eye level on the furnace shell to the left of the door. Two flow meters are regularly supplied, one for air to the generator, the second giving the flow

of carburizing (enriching) gas. The charcoal container is mounted on top of the "Char-Mo" gas generator which is built into the furnace.

The basic atmosphere gas for the furnace is made by reacting carbon (charcoal) with air in a generator built into the furnace so that the gas is formed at furnace temperature. A small portion of the generated gas thus formed is bled from the hopper to eliminate from the charcoal all moisture and volatile products before it is used to generate the atmosphere gas which is introduced into the muffle. Filters are at floor level, easily accessible for cleaning.

NBPA Develops Plans For Fall Meeting

At a May 24 meeting of the executive board and the directors of the National Butane-Propane Association in Chicago detailed plans were laid for the annual convention to be held at the Continental hotel in Chicago on Sept. 23-25.

Exhibits will be maintained in both the Boulevard and Tropical rooms on the fifth floor of that hotel; detailed floor plans and contract forms will be submitted to prospective exhibitors soon. Members of the Association will have first choice in selection of exhibit space.

Group luncheons will be served each day. There will be a banquet and suitable entertainment on the closing day.

If you are writing to the Continental for rooms, tell them you are going to the NBPA meeting; your accommodations (until all available have been booked) will be at the Continental, the Croydon and the Eastgate, all operated by the same management and located within short walking distance of each other.

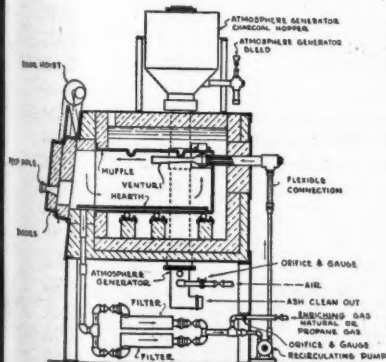


Fig. 2. Diagram of prepared atmosphere circulating system for carburizing furnace.

Electricity Is High Hazard

MATCHES and smoking caused 29.44 per cent of all fires in claims reported to the National Board of Fire Underwriters in the ten-year period from January 1, 1935 to January 1, 1945.

The figures in Fig. 1 do not represent the total number of fires in the United States since they cover only those claims reported to the National Board by its member companies where the cause is ascertainable. The many fires resulting from unknown causes are not included. However, this table is the most

comprehensive study of causes of fires available.

Fires, from all causes known and unknown, insured or not insured, reached an estimated total of two and three-quarter billion dollars damage in the United States during this ten-year period.

According to a regular quarterly survey of the National Fire Protection Association, 329 large loss fires (fires exceeding \$50,000 loss), totaling \$48,800,000 were reported to the NFPA from Dec. 7, 1945 to March 1, 1946, compared with 158 in the preceding three months. This is a 48% increase. These 329 fires represent 32% of the estimated \$151,045,000 loss for the approximate 175,000 fires occurring in the quarter ending March 1.

FIG. 1. U. S. FIRES REPORTED TO NBFU

<i>Reported Cases</i>	<i>Causes of Fires</i>	<i>Per Cent of Causes</i>	<i>Per Cent Property Loss</i>
1,005,576	Matches—Smoking	29.44	16.43
351,152	Misuse of Electricity	10.28	9.57
264,320	Fire Originating off Premises	7.74	12.80
237,930	Chimneys, Flues, etc.	6.96	8.81
232,063	Lightning	6.79	4.83
213,798	Stoves, Furnaces, Boilers, and Pipes...	6.26	8.97
212,773	Sparks on Roofs	6.23	5.18
202,179	Petroleum and its Products	5.92	7.49
190,388	Open Lights	5.57	2.24
143,641	Hot Ashes and Coals—Open Fires	4.20	2.20
102,799	Ignition of Hot Grease, etc.	3.01	1.71
60,474	Spontaneous Combustion	1.77	7.96
48,543	Gas	1.42	1.46
33,359	Sparks from Combustion .....	.98	2.37
29,721	Rubbish and Litter .....	.87	.82
26,142	Miscellaneous .....	.77	1.85
25,895	Explosions .....	.76	2.41
24,902	Friction, Sparks from Machinery .....	.73	2.75
10,395	Fireworks, Balloons, etc. ....	.30	.15
3,416,050		100.00	100.00

ECONOMY SPHERES



A.S.M.E. Code constructed with standard approved fittings. Now available for storage and transport of either Butane, Butane-Propane mixtures, or Propane. Capacities of 150-250-430-1000 water gallons for above ground installations and truck mountings. Write for details.



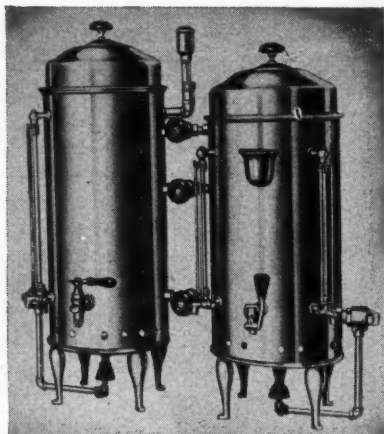
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New Products



Coffee Maker

S. Blickman, Inc., 2101 Gregory Ave., Weehawken, N. J.

Model: Tri-Saver Coffee System.

Application: Brews coffee without urn bags or filter paper. Usable in restaurants, hotels and institutions but not intended for home use.

Description: Has stainless steel body and filter which prevents spoiled coffee due to sagging urn bags being immersed in finished brew. Steel body is sanitary and easy to clean.

Leaks and burnouts prevented by "Sealweld" construction which electrically fuses seams of urn into permanent watertight seal. Built-in thermostat assures proper temperatures and preserves coffee flavor, and also prevents excessive heating, thus saving fuel.

Illustrated catalogs of food service equipment manufactured by S. Blickman, Inc., may be had upon request.

Spherical Tanks

Commercial Shearing & Stamping Co., Youngstown, Ohio.

Model: Sphere Parts.

Description: All parts for spherical tanks are made from flange quality steel and conform to ASME and ASTM specifications. They have a minimum ultimate tensile strength of 55,000 p.s.i. The segments and hemispheres only are manufactured and completed spheres are not assembled. The hemispheres and segments are cold-formed and designed for easy assembly, practical welding and testing.



Application: Spherical tanks provide the greatest of storage capacity per pound of tank material. Gas pressure is equal in all directions.

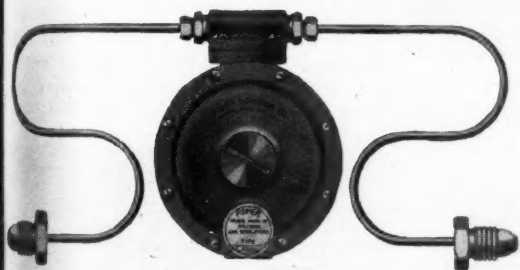
Furnace

The Bryant Heater Co., 17825 St. Clair Ave., Cleveland 10.

Model: Steel Furnace.

Application: Available for gravity or forced-air systems, with push-button or automatic electrical ignition.

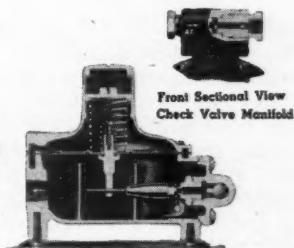
A NEW REGULATOR ASSEMBLY FOR TWO DRUM SERVICE TYPE 923



Fisher's Type 923 embodies new improvements in design — construction and customer appeal — it has had four years field testing — and it is your logical choice for two drum service.

Type 923 features adequate capacity for all domestic and normal commercial loads. Relief valve is built in, and a new compact cross tee slug-check manifold is built integral with inlet fitting, and two removable 20" pigtails. Check valve automatically closes off that side of "T" when empty cylinder is removed thus preventing excessive loss of gas during exchange of cylinders.

Write today for Bulletin LP-2.



Side Sectional View — Type 923

SPECIFICATIONS:

CAPACITY — 120 cu. ft. per hour or more.
SETTING — 11" WC at 10 CFH, 100 lbs. inlet.
REG. OUTLET CONNECTION — $\frac{1}{4}$ " and $\frac{1}{2}$ " IPT.
PIGTAIL CONNECTIONS — $\frac{1}{4}$ " inverted flare x POL or other connections as specified.
RELIEF VALVE — Built in, set and sealed at one lb.

FISHER GOVERNOR COMPANY

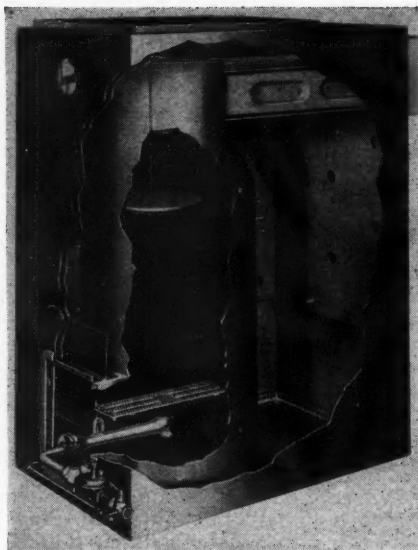
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WESTERN OFFICE:

2334 E. 8th Street, Los Angeles 21, California



and rated at 70, 90, 120 and 140,000 Btu/hr., and meet the latest AGA preheating element temperatures.

Description: Particular attention has been paid to the silent operation of this unit. Combustion chamber and heat exchanger have been arranged in updraft layout to avoid entrapment of condensate and resultant corrosion within the exchanger tubes.

The burner unit is rectangular rather than circular and results in improved and concentrated heat transfer and eliminates hot spots in combustion chamber. Changes make possible the easy cleaning of the furnace.

Steam Cooker

The Vendo Co., 1907 Grand Ave., Kansas City 8, Mo.

Description: A low pressure steam cooker, the Vendo "Fourth Zone" unit is the product of a WPB engineer's search for a better and more certain method of cooking vegetables and

other foods requiring moist heat, and at the same time eliminates pot watching.

Operation of the new gas appliance is simple and easy; tests have proved it to be safe, dependable and fool-proof. It is designed to be incorporated as an integral part of the modern gas range, or can be installed as a self-contained gas appliance in the home kitchen.

The unit for the range is 14½ in. wide, 16 in. deep and 22½ in. high; the inside dimension of the oven itself for separate appliance or range unit is 13½ in. wide, 15 in. deep and 8½ in. high—a capacity sufficient for most of the foods needed for an average family's meal or six quart jars of fruit to be canned.

A gas burner of the standard top stove burner type supplies the heat for steam which is introduced within the oven and is provided from a wa-



The Vendo Cooker as a separate gas appliance may be installed wherever you want it in the kitchen. Or, it may be incorporated in the range.

ter reservoir located in the bottom of the unit. The reservoir holds three quarts of water, is accessible for easy refilling and a float indicator tells at a glance when the reservoir is full.

The Vendo Gas Cooker operates on less than one pound of pressure; the temperature and pressure of the oven are controlled automatically by a simple valve and there are no springs which might cause the tension to vary.

Plastic Tubing

A new, flexible, plastic gas pipe which is claimed to be 84 times more resistant to gas leakage than previous rubber tubing and 64 times more impermeable than the best oil resistant synthetic rubber, has been developed by the Resistoflex Corp., Belleville, N. J. It is known as "compar" tubing.

This plastic tubing is intended to be used for room heater connections, and dental and laboratory burners as well as the semi-rigid copper and cast iron piping used in domestic and industrial gas installations. The new tubing requires no preforming and can be snaked through a building much like an electrical wire. It withstands temperature extremes from -70° to $+250^{\circ}$ F.

This tubing was tested by the Universal Oil Products Co., the manufacturer states, to determine its relation and permeability to hydrocarbon gases as compared to standard and pressure tubings made from natural rubbers and various synthetic rubbers. Each sample of tubing was tested with isobutene, normal butene, isobutane and a mixture of butanes, and it was found that "Resistoflex" was the most impermeable flexible tubing tested.



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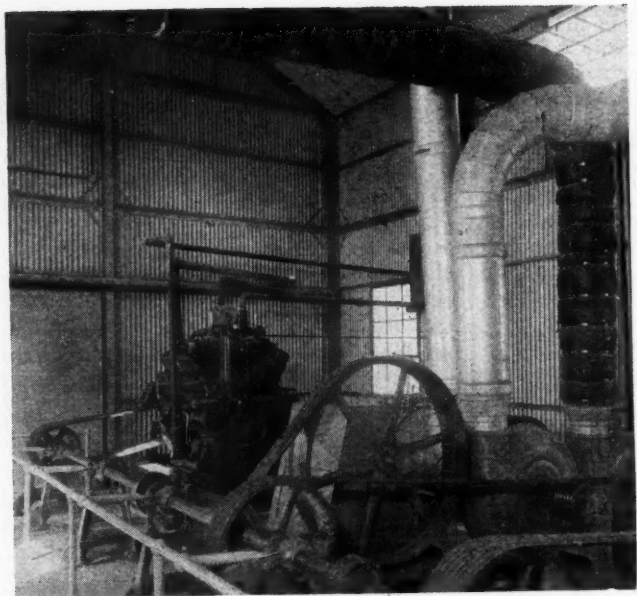
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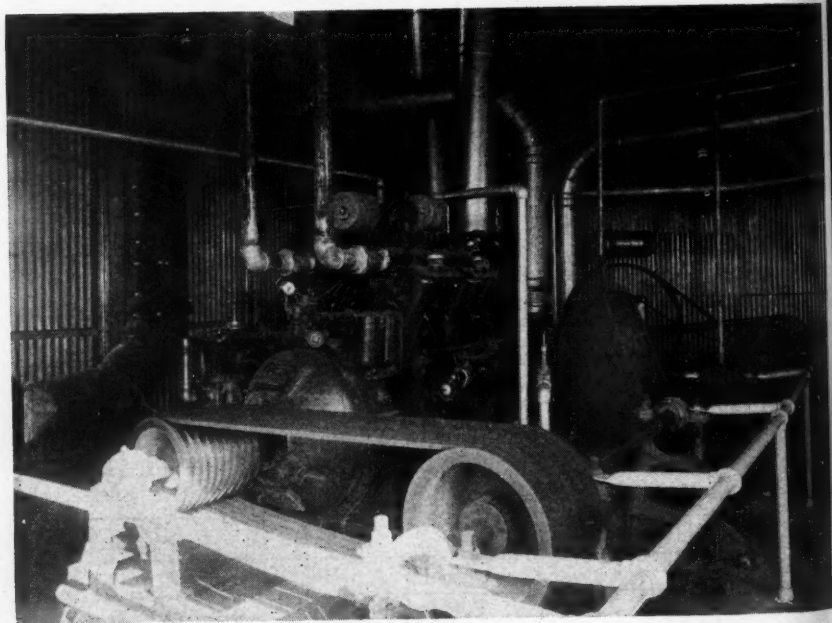
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Cotton Ginning

At left: The plant of the Lane Gin Co., Newbern, Tenn.

Below: The Plantation Gin Co., Wolf Island, Mo., operates this equipment.



POWER Butane Engines Operate Gins

THE application of heavy duty internal combustion engines to cotton ginning operations in Southern states has enabled gins to operate even though far removed from industrial centers.

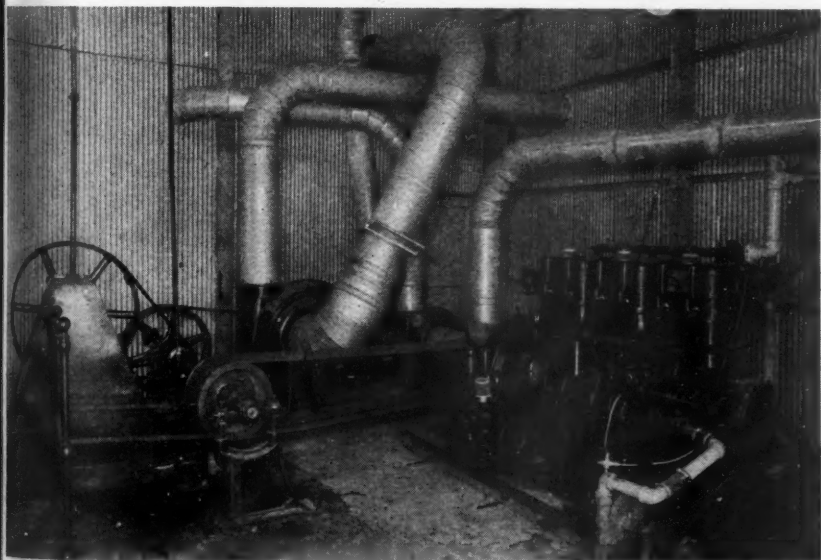
For several years many of these engines have been operating on butane with great success, among them engines manufactured by the LeRoi Co., of Milwaukee.

The accompanying photographs are of LeRoi engines in the cotton gins designated. Referring to these operations, R. M. Darr, of the LeRoi Co., comments as follows:

"We have used butane as a fuel

in our cotton gin and oil field engines for many years with very favorable results. It is an exceptionally clean fuel that eliminates carbon, crankcase dilution and consequent sludge that account for about 90% of repair costs on internal combustion engines. It eliminates the choke in starting and increases the horsepower output by 7½% over the standard rating (gasoline) when compression ratio and carburetion are changed to suit.

"Our consumption rate is approximately 1/10 gallon per hp./hour, which experienced users claim to be 66% savings over previous fuels."



This powerful butane-fueled engine handles all cotton ginning operations of the Farmers Gin Co., Donena, Mo.

Heavy Duty Units in Strong Demand

By LEE SCOTT, JR.

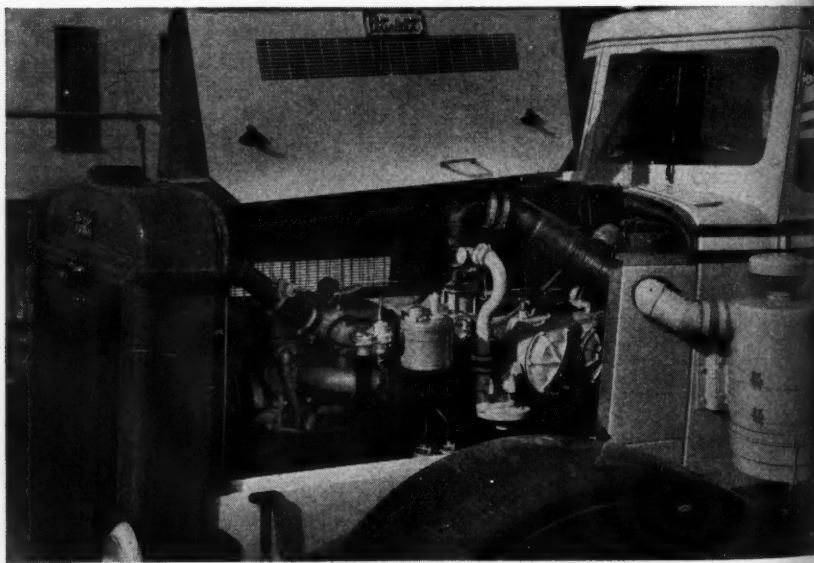
THE Model 400 butane engine has been engineered and specially designed by the Hall-Scott Motor Car Co., Berkeley, Calif., to meet the demands of heavy duty truck hauling. As the result of tests and extensive research during the past five years the company has perfected an engine which achieves maximum horsepower from butane and which has proven itself throughout miles of actual operation.

The 300-horsepower unit, the most

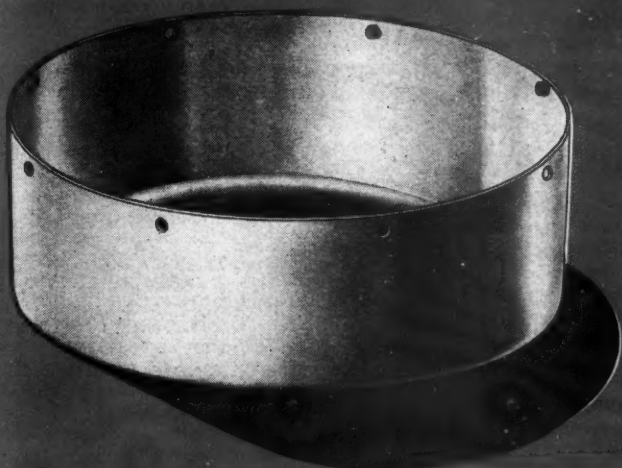
powerful truck engine built, renders top speeds and allows maximum mileage between overhauls. Butane operates clean in every respect, giving off no heavy smoke or fumes, and causing no oil dilution, which allows longer periods of operation before oil changes become necessary.

Calhoun Brothers, hauling livestock between Phoenix and Los Angeles, recognize the advantages of butane and have placed an order for two additional Model 400s for their new trucks. They find the fuel extremely desirable, since it has no ill effect upon cattle and sheep on the way to the slaughter house.

Golden State Co., Ltd., also has placed a repeat order for Hall-Scott butane units to power its additional trucks, since in the milk transport



Intake side of one of Golden State Milk Co.'s Hall-Scott Model 400 butane-equipped engines. This unit hauls 13,000 quarts of bottled milk daily between the California towns of San Luis Obispo and Oakland.



No. 7 OF A SERIES

Every manufacturer of LP-Gas Cylinders welds the wearing ring on after the heads are attached. But not all weld by the same method — and that's something you should know before you buy LP-Gas Cylinders

The eight little round holes

mean a better, stronger, and longer-lasting LP-Gas Cylinder.

Look along the wearing ring of every Trageser LP-Gas Cylinder and you'll see the eight little round holes that are of great importance to every buyer of LP-Gas Cylinders. Through these holes the wearing ring is plug-welded to the

body. This method of welding the wearing-ring is original with Trageser and assures you of a cylinder free from all dangers of a weakened or damaged bottom head-seam weld, a danger to which other methods of attaching the wearing ring are subject. It pays to buy Trageser LP-Gas Cylinders.

Trageser's 14 advantages

- 1 Long experience.
- 2 I. C. C. and customer's markings clear and deep.
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- 6 Completely pickled.
- 7 Paint applied while cylinders are hot; dried under heat.
- 8 High-grade, rust-preventive base paint.
- 9 Completely dehydrated.
- 10 Weight controlled. No excess.
- 11 Rigid Trageser testing, more than I. C. C. compliance.
- 12 All sizes.
- 13 Special tank equipment made to specs and design.
- 14 All new equipment. Most modern plant in U. S. for LP-Gas cylinders.

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tion industry a clean fuel is a necessity to meet sanitary demands.

The heavy transportation industry realizes the advantages of butane, and before the year is out more than 500 Hall-Scott "400" butane engines will be carrying heavily loaded trucks over the highways of California.

Specifications of the Model 400 are given below:

GENERAL—Model 400, 5¼" bore, 7" stroke, 1090 cubic inch displacement.

WEIGHT—2190 pounds complete with standard accessories.

SUSPENSION—3 point.

ACCESSORY DRIVE—Gear and silent chain.

IGNITION—Dual ignition, either 12-point distributor or magneto and distributor.

CARBURETION—Gasoline or Butane. Single 2½" carburetors.

SUMP CAPACITY—5¼ gallons (refill).

OIL FILTER—Full flow—cloth element.

UPPER CRANKCASE—Cast from alloy

iron. Seven main bearings with forged bearing caps.

OIL PUMP—Pressure feed to bearings.

CYLINDER BLOCK—Removable type, en bloc of alloy iron.

CYLINDER HEAD—Cast from alloy iron. Complete valve actuating mechanism carried in cylinder head. Entire assembly can be removed and valves ground on the bench.

CONNECTING RODS—Alloy steel forged "I" beam section, heat treated alloy steel connecting rod bolts and nuts.

CRANKSHAFT—Alloy steel forging, heat treated and counterbalanced. Seven main bearings 3¼" diameter with heavy section webs.

MAIN BEARINGS—Copper lead, steel back. Diameter 3¼". Lengths 2-3/32", 1-19/32", 1-19/32", 2-15/32", 1-19/32", 1-19/32", 8½".

CONNECTING ROD BEARINGS—Copper lead, steel back. Diameter 3". Length 2½".

CAMSHAFT BEARINGS IN HEAD—Seven. Diameter 1½". Lengths 2½", 1½", 1½", 2½", 1½", 1½", 2½".

PISTONS—Aluminum alloy, camground for smooth operation.

PISTON PIN—Case hardened steel, 1½" diameter, floating in piston and rod.

Specify a **TATTERSFIELD**



MANIFOLD for G. M. C. Trucks

Illustrated is a Tattersfield dual butane or gasoline manifold. Its balanced fuel distribution means a balanced budget for your fuel costs; will fit all medium size G.M.C. motors such as T-18, T-23, T-33, AC-500, AC-600 models. When ordering please specify if you wish the heat removed. This extremely cold construction means you take full advantage of the expansive properties of L.P.G.

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At last a meter to increase at least 10% better mileage on any butane operated vehicle. Many years of experience have proven that if the butane operated vehicle is driven correctly as to the manifold pressures, it will be impossible to lug the engine, thus producing at least 10% better mileage and much longer engine life.

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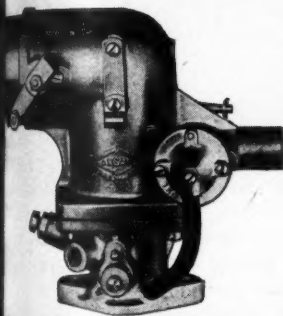
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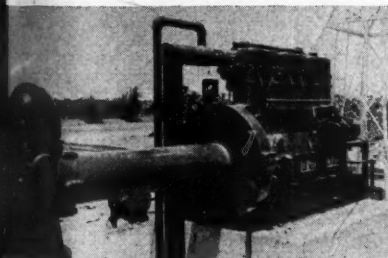
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Multi - Jet (Vertical Type Also Available)



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FAN—25" diameter; 6 blades.

COOLING—Centrifugal water pump.

EXHAUST MANIFOLD—3-piece heat-resistant alloy iron.

INTAKE MANIFOLD—Controllable hot spot for gasoline engine.

FLYWHEEL HOUSING—No. 1 SAE standard, No. 2 SAE optional.

SPARK PLUGS—12 plugs 18 mm. thread.

GOVERNOR—Hall-Scott, flyball type.

New Truck Design Permits Heavier Loads, Easier Steering

Designed for fast, long distance hauling, a new truck has been developed which has a payload capacity of 20 tons through special arrangement of 16 wheels. Used for the first time commercially, four front steering wheels make possible greater load capacity through better distribution.

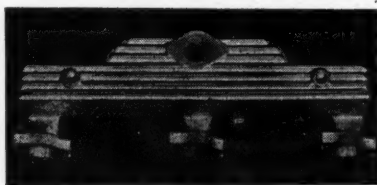
The four front wheels are used in tandem relation rather than dual re-

lation making steering easier. The truck has three rear axles, including two driving or "live" axles, with a "dead" axle between. It is believed that greater traction is achieved because of the remote spacing of the live axles.

Overall length of the truck is 40 feet with a truck bed of 25 feet. It is powered by two standard 93 hp engines mounted in line, one under the hood and one beneath the cab. The two motors can be used together or independently. The power selection can be made at the will of the driver at road speed while in any gear, accomplished by means of a differential type synchronizer.

Another new feature of the truck is the spring suspension which involves the use of a plurality of axles under a vehicle wherein some of the axles are laterally shiftable. An

ELLIS "Bu-Power" MANIFOLDS Now Lead the Way to Power and Mileage



Our dealers, who "Bu-Power" installations, find their customers enjoy **BETTER PERFORMANCE—INCREASED MILEAGE.**

**DEALERSHIPS STILL OPEN
IN CERTAIN TERRITORIES**

The "Bu-Power" Line Bases Its Superiority on These Features:

- **60% LOWER OPERATING TEMPERATURES**—maintained by the presence of seven cooling fins, extending the full length of aluminum manifold.
- **73% MORE VOLUME** (than stock manifold)—permits the use of larger venturi.
- **PERFECT DISTRIBUTION** to all cylinders means a smoother operating engine.
- **EASILY INSTALLED**—every manifold has three vacuum brake take-offs.
- **STEEL EXHAUST "BLOCK-OFF" PLATES FURNISHED ON REQUEST**—Cutting or welding exhaust manifold eliminated.

ELLIS MANIFOLD COMPANY

1708 S. Soto Street ★ Phone AN 1-3463 ★ Los Angeles 23, California

ENSIGN

LIQUEFIED PETROLEUM GAS

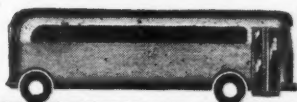
CARBURETORS



TRUCKS



TRACTORS



BUSSES

BUTANE is the **IDEAL MOTOR FUEL**. The principal advantages of Butane as a fuel for trucks, tractors and stationary engines are low fuel costs plus definite reductions in engine maintenance and oil consumption.

ENSIGN users report savings up to 1¢ per mile, reduction in maintenance cost from 25% to 40%—25,000 miles between oil drains with smoother and more powerful operation.

Butane properly carburetted burns clean and dry without carbon, crankcase dilution or foul exhaust odors.

Successful Butane carburetion and its adaption are direct results of extensive engineering research. Quality Control in manufacturing is also of extreme importance to Ensign users.—Examine closely any **ENSIGN** product—good, sturdy, serviceable—the quality is there.

Your selection of **ENSIGN** products brings you the best that engineering skill and resources can provide—the results of experience gained through the carburetion of over 10,000,000 horse power.

—Write us for complete information—

ENSIGN

CARBURETOR COMPANY

310 SOUTH ALAMEDA STREET • P.O. BOX 229 • HUNTINGTON PARK, CALIFORNIA

FACTORY BRANCH: 2644 SOUTH MICHIGAN AVENUE, CHICAGO 16, ILLINOIS

"PIONEERS IN EFFICIENT CARBURETION" • ESTABLISHED 1911

quate lateral movement takes place in the wheels and axles when the vehicle is making turns. This special spring suspension method allows any set of dual wheels to rise or drop with the level of the road, the frame, bed and load remaining level.

Standard one and one-half ton truck parts are used with the exception of the frame and suspension.

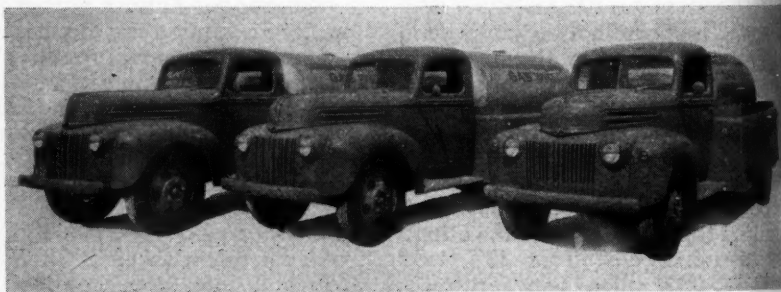
The truck is manufactured by the Eisenhauer Manufacturing Co., Van Wert, Ohio.

E. E. Hadlick Visits California In Interests of NBPA

Elwin E. Hadlick, executive vice president of National Butane-Propane Association recently spent a short time calling on distributors of liquefied petroleum gas in California.

He reports great interest among the distributors in establishment of NBPA and in the work which it is set out to do. While in California, Hadlick said "I would like to spend sufficient time here to call on every distributor. That has not been possible. We know from the calls that have been made as well as from correspondence that distributors in California recognize the need for a national association and are going to support it in substantial numbers.

"While the Association's plans for meetings are presently concentrated on a district session at Fort Worth, Texas, in June and on the national convention in Chicago in September, it is our intention to hold a series of district meetings in the near future. At least two of these will be in California."



ANOTHER FLEET OF PROPANE DELIVERY TANK TRUCKS READY FOR SERVICE FOR CALIFORNIA-PACIFIC UTILITIES COMPANY

Built by

SUPERIOR TANK & CONSTRUCTION CO.

6155 S. Eastern

Phone AN. 4157

Los Angeles, Calif.

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READY FOR YOU NOW

VANISHING SHELF...

KOOL-KONTROL PANEL...

GRILLEVATOR BROILER...

The New
O'KEEFE & MERRITT
GAS RANGE

ter check up on the O'Keefe
Merritt Gas Range dealer pos-
sibilities in your community! An
er to sell quality product...so
ay extra and exclusive features.

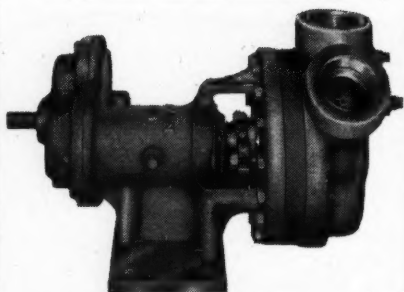
an O'Keefe & Merritt Dealer you can give your customers this finer precision engineered gas range.

O'KEEFE & MERRITT CO.

00 EAST OLYMPIC BOULEVARD • LOS ANGELES 23, CALIFORNIA

NE Nov
— 1946

IT'S NEW



**IT'S BUILT ESPECIALLY
FOR BUTANE-PROPANE**

**CORKEN'S
TRUCK PUMP**

—is now ready to go to work for you. Ready to unload delivery trucks into above or underground storage or into 100-pound cylinders.

Corken's Truck Pump has enough capacity to transfer from transports to storage . . . enough differential pressure to fill bottles.

Extremely sturdy . . . takes up small space, being 16½" long, 10" high and 10" wide . . . weighs 100 lbs. Built to transfer millions of gallons of LP Gas without maintenance. Write, wire or phone for our illustrated folder.

CORKEN'S

L P GAS EQUIPMENT DEPT.

206 E. Grand Ave.
OKLAHOMA CITY 2, OKLA.
Tel. LD 765, 7-6517

THE TRADE

Servel, Inc., Evansville, Indiana, making available to the gas industry the second issue of the *Homemaker Digest*, it is announced by R. J. Caniff, advertising and sales promotion manager for Servel.

The 24-page issue, done almost entirely in four colors, features condensations from such women's publications as *Woman's Home Companion*, *The American Home*, *Better Homes and Gardens*, *Good Housekeeping*, *Parents'*, *Woman's Day*, and *McCall*.

F. E. Weldon and A. C. Kelterborn are new additions to the New York factory branch sales staff of General Controls Co., Glendale, Calif., according to J. F. Ray, director of sales.

The New York factory branch serves users of automatic pressure, temperature, and flow controls in New York state, New Jersey and Connecticut.

Rheem Manufacturing Co., maker of steel shipping containers and basic household appliances, are establishing London offices in conjunction with the extension of operations within the British Empire, it is announced by W. E. Zander, vice president in charge of the company's foreign activities.

Lanning Roper, recently returned from service with the U. S. Navy as lieutenant, will be in charge of the London office and left New York in April by air for England, accompanied by A. Lightfoot Walker, executive assistant to R. S. Rheem, president.

Appointment of Norman E. Thompson as production manager for plants of Rheem Manufacturing Co. has been announced by W. E. Curran.

When your salesmen sell

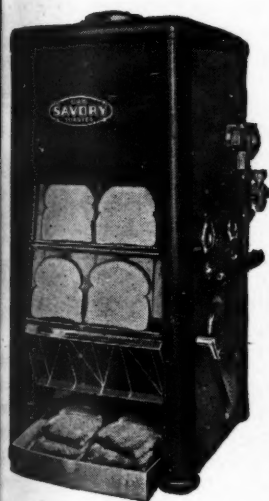
SAVORY...

"THEY'RE

COOKING

WITH

GAS"



Every time your salesmen install a Savory Toaster in outpost inns, roadside restaurants, hotels or other food service establishments, they're adding another potent salesman to your organization. The Savory line benefits L.P. dealers because (while it is not a big load builder) it emphasizes the advantages of gas for all commercial cooking. Eating places benefit because they get a toaster that provides fresh, hot "Appetized" toast at peak or off-peak periods at an operating cost as low as $\frac{1}{2}$ ¢ per hour.

L.P. Dealers handling the Savory line are now receiving shipments of toasters from our factory. Now is the time for you to write us for information about the attractive Savory offer that's awaiting you.

Savory
EQUIPMENT, Inc.

Model PD Gas Operated
6 Slices Per Minute

137 Pacific St.

Newark 5, N. J.

Sold by Leading Dealers Everywhere



HELCO Regulator for Butane-Propane Service

Approved: California Industrial Safety Division No. 2099. Inlet pressure—up to 250 lbs. tank pressure. Outlet pressure—11 in. water column. Capacity—200 c.f.h. Fittings—inlet P.O.L., outlet $\frac{1}{2}$ " and $\frac{3}{4}$ ".

Available for Immediate Delivery

• • •

Bulk Storage Tanks

14000 and 18000 gal. propane tanks available for lease or sale. Fuel service by rail if desired. Engineering service for installation of bulk storage in 11 western states. Your inquiries are invited.

H. E. Lynn & Co., Inc.

548 S. Spring St.
Los Angeles 13, Calif.

director and vice president in charge of manufacturing.

Richard S. Sawyer has been named assistant general manager of purchasing and traffic for Rheem and will make his headquarters in the New York office.

Andrew E. Curry has been appointed district manager of Rheem's eastern heating equipment division with headquarters in New York City.

American Meter Co. has announced the election of Col. R. W. McClenahan as a vice president of the company, effective as of April 17.

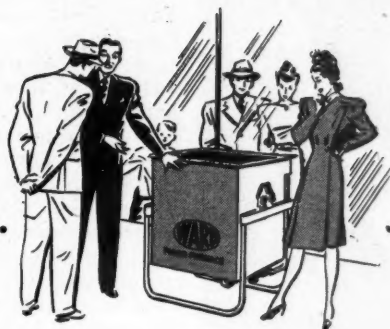
Col. McClenahan returned to the company after his discharge from the U. S. Army Air Forces in November 1945. He has been active since that time working on special assignments for the company.

To stimulate more local advertising by dealers and distributors, Pay Furnace Co., Beverly Hills, Calif. has just released a new advertising portfolio.

Designated as a complete "package" advertising and sales promotion program, the plan, as outlined in the portfolio, offers a series of folders for store and mail distribution; booklets, broadsides, direct mail material, display pieces, a series of mats for newspaper ads; catalogs and a selection of transcribed radio announcements designed for local dealer sponsorship.

The board of directors at the recent meeting elected R. A. Williams a director of American Car and Foundry Co. to succeed W. L. Sturcliffe who recently resigned from the post.

Mr. Williams has been vice president of sales for the company since December, 1943.



Every Dealer is a BOOSTER

Ward dealers are enthusiastic about Ward Floor Furnaces! They know from experience these two things:

1. *Ward has well-established customer acceptance. In every area where it is sold it is considered the standard of quality among floor furnaces — the furnace that is recommended by one home owner to another.*
2. *Ward delivers efficient, trouble-free performance. Results: no "comebacks" or complaints.*

The Ward Floor Furnace of today is the result of 37 years' experience in building

floor furnaces. *We build floor furnaces exclusively and can concentrate our entire engineering and manufacturing resources on this one product.*

At the present time, we are able to fill only a fraction of the orders received. Our present dealers must come first. However, we are looking forward to the day when we will be able to offer additional dealers the sales advantages of Ward Floor Furnaces.

★

37 YEARS OF "KNOW-HOW"

WARD HEATER COMPANY

1800 W Washington Blvd., Los Angeles 7, Calif.





LPG STORAGE SAFETY...

Built-in

● Safety in all Graver-built LPG storage tanks is provided for by our rigid adherence to the ASME Code for Un-fired Pressure Vessels . . . by the fact that all welding on such tanks is handled by ASME qualified welders . . . and by our modern X-raying and stress-relieving facilities. Graver's ability to provide safe, dependable LPG storage is backed by 85 years of experience in the fabrication of steel plate.

Graver tanks for the storage of LPG are available in any size and capacity to meet your requirements. Shop built and field erected.

Send your blueprints and specifications for prompt quotations.



Fabricated Steel Plate Division of

GRAVER TANK & MFG. CO., INC.

Gen. Offices: 4811-63 Tod Ave., E. Chicago, Ind.
New York Chicago Catasauqua, Pa. Tulsa, Okla.
Philadelphia Port Arthur, Texas Pittsburgh, Pa.

The Southern Gas & Equipment Co. of Tulsa, Okla., manufacturers of B gas equipment and household appliance distributors, has announced the addition of four new men to the organization.

Old hand in the B-P Gas business Lewis E. Bowen, upper left, who started in 1939 with the National Butane Gas Co. of Memphis. Bowen resigned his position there to join Southern Gas in 1939, and remained until November, 1942, at which time he entered the Army Air Force. He returned to Southern Gas in April, 1946, after spending 26 months in Europe. He is now in charge of sales at the Tulsa office.

Frank Q. O'Neill, upper right, recently appointed manager of the Atlantic office, is a graduate of Yale University. In 1942 he entered the Navy and was commissioned. He spent a year and a half overseas in the New Hebrides Islands and following his release from active service, joined Southern Gas.

Paul Williamson, lower left, is



men with Southern Gas & Equipment for two years as sales engineer in Oklahoma. Mr. Williamson is a native Oklahoman, graduating from the Oklahoma School of Accountancy. After 8 years with the British-American Oil Co., he joined SG&E as a salesman.

Nelson E. Keller, lower right, was for 7 years with the General Electric Supply Corp. before the outbreak of war. Early in 1946, Mr. Keller joined SG&E as manager of the carburetion division and purchasing agent at the Tulsa Office.

Leslie Olson, head of engineering production and sales of propane and butane tanks for Black, Sivalls & Bryson, Inc., Oklahoma City, died suddenly May 5.

He was well known in liquefied petroleum gas circles and active in ad-

visory work with various state regulatory bodies and safety organizations.

Mr. Olson came to B. S. & B. in 1932 and when butane and propane tanks gained in popularity, he took charge of the department the company set up for this division.

Roberts & Mander Corp., Hatboro, Pa., has announced the appointment of Paul J. France as district sales representative for western Pennsylvania. Mr. France will also handle "Quality" sales in adjoining sections of West Virginia and Ohio.

In making this announcement, R. S. Agee, vice president, stated that extensive merchandising activities for appliances have been planned for the Western Pennsylvania territory. Mr. France will direct the promotion and

Immediate delivery on

LPG SYSTEMS

Shipments from Bessemer, Alabama, ASME Underwriter Approved Tanks, 125 to 200 pound working pressure, aboveground or underground.

Eight years' experience in building quality tanks.

L. P. G. EQUIPMENT COMPANY

108 W. Concord Avenue, Orlando, Florida

P. O. Box 3507, Telephone 5206

PROPANE

If You Are Seeking:—

- 1—A DEPENDABLE SOURCE
- 2—A UNIFORM PRODUCT
- 3—A CAPABLE SUPPLIER
- 4—AN EXPERIENCED MANUFACTURER

Then inquire—

Cities Service Oil Co.

In Propane also

CITIES SERVICE

means

GOOD SERVICE

**CITIES
Service Oil Co.**

(Delaware)

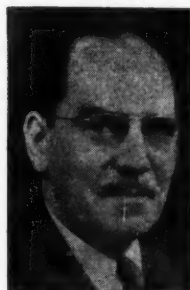
BARTLESVILLE, OKLA. — CHICAGO, ILL.

Other Sales Offices

Cleveland
St. Paul

Kansas City
Toronto

sale of appliances, and train
company and appliance dealer
men. He will also handle sales
"Quality" appliances for new
construction and apartment
modernization.



R. E. MANNING

Roy E. Manning has been made national sales manager of the Pittsburgh Water Heater Co., according to a recent announcement by J. McNamara, president.

Mr. Manning has been affiliated in the past with the Pittsburgh Water Heater Co. as a factory distributor in the tri-state district which embraces Ohio, West Virginia and western Pennsylvania.

In his new position, Mr. Manning will be in charge of sales, service, advertising, and marketing.

Bryant Heater Co., Cleveland, general heating equipment manufacturers, is distributing a 42-page spiral-bound brochure, "Town of Tomorrow," reviewing various styles of American architecture and containing examples of homes suggested by experienced builders as bestsellers when home building is again prevalent.

You may send for a free copy.

John T. Mascuch, president of Breeze Corp., Inc., Newark, N. J., has announced that the firm has purchased the Anderson Stove Co., Inc. and Foundry Service, Inc., both of Anderson, Ind.

The Anderson stove will retain its name and design. It will be distributed by...

ed by a new, national sales organization headed by Alfred G. Birken-
er, former president of the An-
erson Co., who remains with the
ve firm as vice president.

Henry E. Balsley, handling heating
and ventilating equipment, has moved
his new offices at 1681 Univer-
sity Ave., St. Paul.

Among other lines, Mr. Balsley han-
dles the McKee-Eclipse high pressure
boilers and gas burners and Reznor
heating equipment.

L. C. Roney, Inc., Inglewood, Calif.,
announces the addition of two new
men to its sales staff. They are C. L.
Parkhill, Jr., and Charles Postal, both
of whom are contacting the trade for
the Roney organization. Their field of
activity will be limited for the present

time to the eleven western states, ac-
cording to Mr. Roney.

Mr. Parkhill is a graduate of Ari-
zone State College where he majored
in mechanical engineering. He later
finished his M.E. training in the air
corps. He left the service recently
after spending four years as a pilot.

Mr. Postal has had long experience
in the petroleum industry. His work
has given him training in both field
and refinery work.

H. E. Handley, president and gen-
eral manager, Handley-Brown Heater
Co., has announced the completion of
the new factory of the company at
Jackson, Mich., where will be manu-
factured the company's gas water
heaters and gas conversion burners.

The new factory will be heated by
Handley-Brown gas conversion burn-

Designed for

LP GAS

**NEW ALL ALUMINUM
PORT-O-STOVE**

Uses Butane, Propane or any
mixture of the two with equal
satisfaction. Ideal where small
installation is required. Write
for full particulars.



FUEL SUPPLY
ATTACHED
HERE

Weight

Only 5 $\frac{3}{8}$ lbs.

Guaranteed against mechanical and material defects

Manufactured by

ART METAL APPLIANCE CO.

3106 PARK AVE. • ST. LOUIS 4, MO.

2

ers installed in boilers in the laboratory and display room except for the factory proper which will be heated by General Gas Light Co.'s No. 165 space heating units, installed to provide individually controlled heating.

S. C. Bernhardt has resigned his position as vice president of The Estate Stove Co., Hamilton, Ohio, effective May 1.

Mr. Bernhardt joined the Estate sales organization in 1930 as sales manager and in 1938 became general sales manager at the home office in Hamilton. He was elected vice president in charge of sales in 1943.

Expansion of Shell Oil Co.'s research laboratories at Emeryville, Calif., involving a capital expenditure of more than \$3,500,000 is announced by A. E. Lacomblé, president of Shell Development Co. Construction will be-

gin this spring and continue over two-year period.

The undertaking includes construction of three major new buildings and extensive remodeling of present facilities.

Stacey Brothers Gas Construction Co., Cincinnati, one of the Dress Industries, is completing a large expansion program involving the entire organization and shop facilities in order to give a highly specialized technical service to the gas industry. Emphasis is placed on the design and construction of propane and butane air installations and liquefied natural gas storage plants, according to William E. Gruening, president.

The engineering services have been organized to cope with problems in the gas industry such as existing anticipated peak load demands and replacing equipment and processes.

Now PIPE JOINT COMPOUND in Stick Form

FOR ALL THOSE PIPE INSTALLATION
AND REPAIR JOBS—Always Ready for
Instant Use.

ECONOMICAL . . HANDY . . CLEAN

NO MESS — NO BRUSH
NO WASTE

TRADE MARK REG.



PATENTED
COPR. 1946



Note these FEATURES

- Withstands butane, propane, Freon, methyl chloride, gasoline, oil, air, water, steam, acid, gas, brine, etc.
- Lubricates and completely seals pipe joint threads, nuts, bolts, gaskets, turnbuckles, etc.
- Contains no lead. Contains no injurious ingredients.

Ask Your Jobber—Or Write Us

LAKE CHEMICAL CO.

628 N. WESTERN AVE.
CHICAGO 12, ILL.

which have carried a terrific burden during the war years, but must now be modernized to enable the industry to expand further.

W. S. (Sim) Jones has joined the organization of Caloric Gas Valve Works and is representing the company throughout the entire state of Michigan. The announcement was made by Julius Klein, general sales director.

Mr. Jones has been in the appliance business for nearly 30 years.

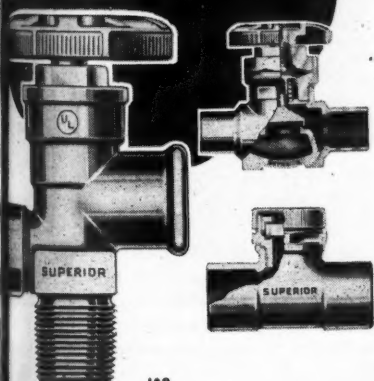
H. "Red" Gottwald, for 17 years service engineer for Pittsburgh Portable Meter Co.-Nordstrom Valve Co., in the metropolitan New York territory, has been assigned to

A. L. DiGiulian points to Latin American area that H. R. Gottwald will cover.

the Rockwell International Corp., the new name for the organization

Superior LP-GAS VALVES AND ACCESSORIES

For Bulk Stations, Tank Trucks, and above and below ground systems.



108

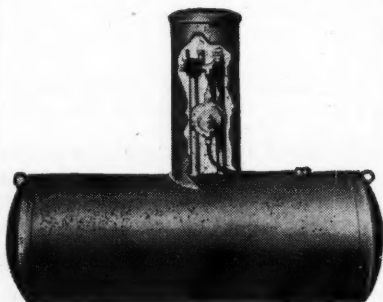
- ★ **LP-GAS CYLINDER VALVES** are listed as Standard and for re-examination service by Underwriters' Laboratories, Inc.
- ★ **GLOBE, LINE AND ANGLE VALVES** — Diaphragm Packless and Wing Cap — in Flare sizes from $\frac{1}{4}$ " to $\frac{3}{4}$ " O.D.; Sweat sizes from $\frac{1}{4}$ " to $2\frac{1}{4}$ " O.D.; F.P.T. sizes from $\frac{1}{2}$ " to 2".
- ★ **SIGHT GLASSES**, suitable for any normal LP-Gas pressure. Entire top assembly removable while soldering lines to body.
- ★ **FLARE FITTINGS**, including Unions, Couplings, Adapters, Elbows, Tees and Nuts — listed as Standard by Underwriters' Laboratories, Inc.

SUPERIOR
VALVE & FITTINGS COMPANY
PITTSBURGH 26, PENNSYLVANIA

From Home Appliances To Industrial Equipment

Our L-P Gas Line Is Complete

**TRUCK, TRANSPORT, STORAGE
TANKS, PRESSURE VESSELS, GAS
SYSTEMS, BULK TANKS**



Complete stocks of appliances,
accessories and dealer equipment



**SOUTHERN GAS &
EQUIPMENT CO.**

TULSA

OKLAHOMA

BRANCHES:

Sapulpa and Enid, Oklahoma
Atlanta, Georgia

Southern Gas & Equipment Co.
of Texas—Houston

formed to handle export sales in service of the company's products.

Mr. Gottwald has been appointed special representative for Latin America by A. L. DiGiuliano, vice president and general manager of the export firm. He is now making a preliminary trip covering the important markets in South America.

Mr. Gottwald, recently back from a market survey of the Venezuelan fields, feels that the development of this rich export market can only be held back by a lack of understanding of the problems peculiar to operations in Venezuela.

Mr. Maire will devote his efforts to serving users of automatic pressure

At the annual meeting of the Florence Stove Co., F. J. Hoenigmann was elected executive vice president and

director. He will be in charge of operations of the Florence Stove Co., with factories in Gardner, Mass., Kankakee, Ill., and Lewisburg, Tenn.



F. J. HOENIGMANN

Mr. Hoenigmann has been executive vice president and general manager of the Cribbs and Sexton Co.

Chicago, for six years and had formerly been sales manager of the company for 10 years. He is chairman of the gas range division of the American Gas Association and is also director of the Gas Appliance Manufacturers Association.

R. L. Fowler was re-elected president and chairman of the board; H. C. Berry, manager of the Gardner factory, was elected a vice president; and

- S A F E T Y ! -

Butane - Propane Tanks Designed for Rigid Requirements

Liquefied Petroleum Gas tanks by Lancaster are custom-designed to provide a lifetime of safe and economical storage. This reputation is made up of factors, such as highly-trained engineers, skilled workmanship, x-ray inspection of finished U-68 welds and many others. Please send us your inquiries today for prompt attention with no obligation on your part.

Bulk Tanks • Skid Tanks • Truck Tanks
Gas Plants for Municipalities

LANCASTER IRON WORKS, INC.

LANCASTER

PENNA.

18,000 Gal. Water — 15,000 Gal.
Liquid Propane Storage Tank
8'0-1/16" I.D. x 50'5-1/4" Long.

GAS APPLIANCE TRUCK

Pneumatic Rubber Tires—Available NOW



An all purpose, one man truck for cylinders and appliances. No more back-breaking lifting. Tapered body gives operator ample room between handles. Cradle construction accommodates any cylinder up to 100 pounds. Wide Bottom flanges give support for appliances. Web strap (optional) holds appliance rigidly. Rounded handle grips permit skidding from end of delivery truck. Time saving, labor saving, cost cutting. Saves lawns. Write for prices and folder.

THOMAS TRUCK & CASTER COMPANY
6725 MISSISSIPPI RIVER KEOKUK, IOWA



There's a pump worth waiting for

VIKING ROTARY PUMPS

"I know I will have to wait to get my Viking Rotary Pump, but I've used Vikings for many years and I know they really deliver the goods."

To the man who has been waiting for a Viking we say: They are coming faster and faster. Work on the tremendous backlog of orders is going on, day and night. The situation is improving. And please remember, everything is being done to deliver your pumps just as fast as possible.

In the meantime, ask for free bulletin 46-SB. It gives you the latest information on Viking Rotary Pumps.



See Our
Catalog In
SWEETS

VIKING
Pump Company
CEDAR FALLS, IOWA

Vice President W. T. MacKay, head of the Kankakee plant, was made a director. Other officers re-elected were: Vice presidents, H. H. Morse and G. B. Colburn; treasurer and secretary, A. E. Luke; assistant treasurer, B. O. Ashworth.

Irwin A. Rose was recently elected as vice president in charge of manufacturing of The Maytag Co., Newton,



IRWIN A. ROSE

Iowa. Mr. Rose held a similar position for the past four years with the Edison General Electric Appliance Co., Inc., Chicago. He had been with the GE subsidiary in Chicago for 23 years, serving in various capacities.

Mr. Rose is taking over a post at Maytag formerly held by A. H. Taylor who resigned last September. In the meantime, the duties of manufacturing executive have been handled by Fred Maytag II, third generation president of the concern.

Harry A. Ells, manager of the natural gasoline and chemical division, Cities Service Oil Co., Bartlesville, Okla., has now left that position to head the Kansas-Oklahoma activities of the United Carbon Co., Charleston, W. Va., at its new offices being established at Liberal, Kan.

Mr. Ells has been in Cities Service employ since 1923 when he worked on a gasoline construction gang for the company shortly after his graduation from Stanford University as a mining engineer. He has been active in the affairs of the natural gasoline industry as a whole through committee

L-P GAS FITTINGS AND ACCESSORIES NOW AVAILABLE FOR IMMEDIATE DELIVERY

Standard and Special Pigtails
Standard and Special Manifold Blocks

Special and Standard Gas Fittings
 Automatic and Manual Gas Lighters
 Screen Filters

Write for Price Lists and Discounts

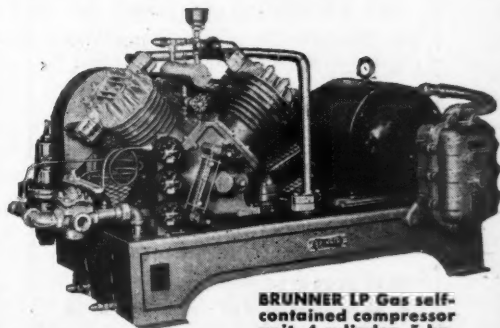
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When all liquid petroleum has been transferred from a tank car or tank truck there is still a considerable quantity of vapor left in the tank. This cannot be recovered by a liquid pump. This vapor amounts to from 500 to 1000 lbs. of LP Gas in every tank car unloaded! You pay for this lost poundage as well as its transportation! The vapor can be recovered with the Brunner LP Gas Unit, a compressor assembly that pumps the residue liquids and recovers their residue vapor. It is a package unit that is outstanding in speed, efficiency, safety and low cost.

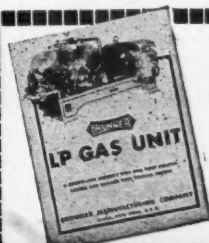


BRUNNER LP Gas self-contained compressor unit, 4 cylinder, 5 hp.

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For over 40 years the Symbol of Quality



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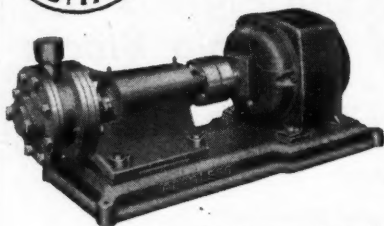
It describes the Brunner LP Gas Unit and contains more illustrations, diagrams, tables and valuable information on the handling of LP Gas than any booklet ever issued.

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Horizontal Turbine



(Vane)
PUMPS



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**For BUTANE and
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For high heads, low capacities.
1 to 150 g.p.m. Heads up to 300 lbs.
Speeds to 3600 r.p.m.

- Freely rotating impeller—no casing contact friction.
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- Bearing thrust load eliminated by hydraulically balanced twin-inlet distribution system.
- Standard model develops up to 200 lbs. in single stage.
- Other models for higher pressures.

PEERLESS PUMPS

Food Machinery Corporation

Factories: Los Angeles 31, Calif.
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work and as a director of the Natural Gasoline Association of America. He has been a vice president of this organization for the past three years.

The American Stove Co., manufacturer of "Magic Chef" gas ranges, has incorporated many of the newest ideas of structural and aesthetic design in its projected administration building to be constructed in St. Louis, Mo. Arthur Stockstrom, president, has announced.

This six-story building will centralize the principal offices and executive activities of the company at their new location on South Kingshighway Blvd. in St. Louis.

Paul L. Goldstrohm is now general manager of the Lewis Pump Co., Philadelphia, Pa., factory representative of the Geo.

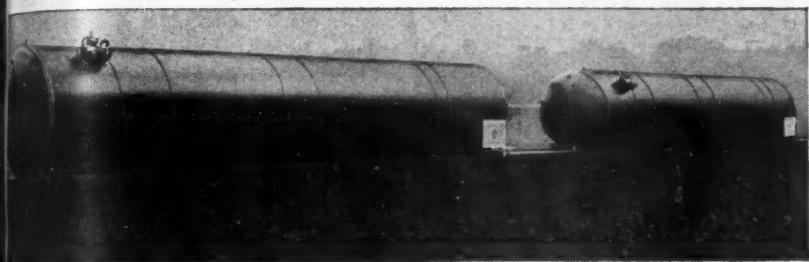
D. Roper Corp. pump division, Rockford, Ill. Mr. Goldstrohm was formerly vice president and member of the board of directors of the Brown Instrument Co., Philadelphia, a subsidiary of the Minneapolis-Honeywell Regulator Co.



PAUL GOLDSTROHM

Other new members of the Roper organization are: Morton B. Kammerer, who will be working with Vice President W. J. Foster in territory which includes the District of Columbia, Virginia and West Virginia; Dan Sullivan, who has been assigned to Los Angeles, where he will work with H. Hall, and Reynolds R. Davis, who has recently been appointed district

MORE TANKS . . . to handle more gas



The demand for an ever increasing supply of LP-Gas to accommodate industry as well as rural districts and small towns, is being taken care of by operators who are adding to their storage facilities in anticipation of growing business.

Downingtown bulk storage tanks meet the need of the LP-gas industry. Our Engineering Division has designed and we have fabricated several hundred of these tanks. We can furnish, if you desire, the necessary valves and gauges required, and the necessary platforms and ladders. Downingtown tanks will comply with the U.S.M.E. Code, National Board of Fire Underwriters and regulations of various State Code requirements.

Downingtown has had over 30 consecutive years' fabrication experience. Our knowledge of design, specifica-

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For nearly two decades Standard of California has been improving the production of liquefied petroleum gases. Wide industrial, commercial, and domestic use of these top-quality products testifies to the efficiency of these Standard L-P gases.



PRO-GAS . . . A propane product. Bulk delivery for domestic, commercial, and industrial use. Meets requirements of steel cutting, annealing, brazing, stress relieving, heat treating.

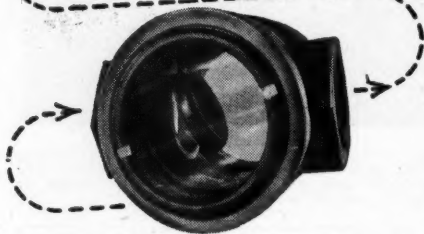
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positive knowledge eliminates mistakes



• When an SK Flow Indicator is installed in your pipe line you can know exactly whether a gas or liquid petroleum is flowing, whether flow is slow or fast, and its direction. There is no need to guess. Costly errors can be eliminated; time can be saved. These indicators are widely used on bottled gas trucks to show, by indicating no flow, both when tank on truck is full and when tanks filled from the truck are full and for many other applications.

SK Flow Indicators meet pressure specifications of extra heavy pipe fittings. Glass is tempered plate, thermal-shock resistant and practically unbreakable. For use at pressures up to 250 psi and at temperatures up to 250° F. Flapper type indicators, having threaded connections, are supplied in sizes from ½ to 3 inches and Rotary type from ½ to 2 inches, inclusive.

For complete information write for Bulletin 18-W.

SK SCHUTTE & KOERTING CO.
Manufacturing Engineers
 1148 Thompson Street Philadelphia 22, Pa.

representative with headquarters Lubbock, Texas. In covering Texas and New Mexico, Mr. D will work under the supervision J. C. Mansfield out of Roper's Dallas office.

Announcement of the appointment of Charles R. Reeves as works manager of Kalamazoo Stove and Furnace Co. is made by Arthur L. Blake, president.

A former engineering consultant who specialized in plant layout and manufacturing methods, Mr. Reeves will manage both of Kalamazoo's recently re-designed plants.

E. T. Howard, for the past 11 years sales manager for General Controls Co., Glendale, Calif., has been named general sales manager of Fraser & Johnston Co., San Francisco.

Announcement of the appointment effective June 15, is made by President W. H. Johnston.

Mr. Howard has traveled the nation for 20 years, calling on men in the heating and air conditioning field. He is a director of the Pacific Coast Gas Association, and general chairman of its manufacturing section. He is also a director of the national Gas Appliance Manufacturing Association.

Eddie Howard will head up Fraser & Johnston's accelerated national sales program, Johnston states. The firm produces the extensive line of "Biltwel" and "Toridaire" gas furnaces. The line of Biltwel frozen food display and storage cabinets will shortly be announced.

At the same time, Fraser & Johnston announced that Alec Easton, formerly assistant sales manager for Biltwel Oil Burner Co. and more recently major in the U. S. Army connected with the Chemical Warfare Service, will serve as assistant sales manager of the firm.

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Butane and Propane Gas Systems

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The test of your source of supply is the way it takes care of your requirements during the peak demand season. SINCLAIR plans its production to fill the orders of its dealers. Plan your propane purchases with SINCLAIR now.

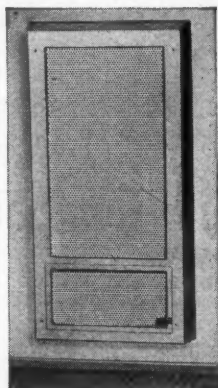
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Williams Vented WALL WARMOLATOR

for New Residences.

*For Butane, Propane
or Natural Gas.*



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Ask for circular, form 211.

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Sales Office: 3115 Beverly Blvd.
Los Angeles 4, Calif.
Factory: 1821 Flower Street
Glendale 1, Calif.

Dade Gas Corp. Organized To Operate in Florida

The Dade Gas Corp., wholesale and retail distributors of liquefied gas and appliances, has recently been formed with offices in Miami and plant at Hialeah, Fla. Associated with the enterprise are Sid Langer, Al and Henry Penchansky and Sam Weiner.

Prior to his enlistment in the Army, Mr. Langer was secretary of the General Natural Gas Co., and also of the Public Gas Co., of Miami. He has been in the bottled gas business since 1926, having helped form the original Langer Gas Co. of Woodridge, N. Y.

The Dade Corp. expects to set up a dealer organization covering the state of Florida and to operate it in conjunction with a retail outlet in Miami and vicinity.

Oklahoma Association Holds Meetings in Six Districts

A series of district meetings have been held lately by the Oklahoma Liquefied Petroleum Gas Association arranged by the association board of directors.

Meeting places selected were Lawton, Enid, Woodward, Ardmore, McAlester, and Tulsa.

Fred L. Yates, executive secretary of the association, announced that the purpose of the meetings was to assist dealers and others in the industry to find answers to their problems. Some authority on installations was scheduled to be present at each meeting to lead question-and-answer discussions. At some of the meetings it also was planned to have instructive talks on combustion types of B-P Gas engines and motors.

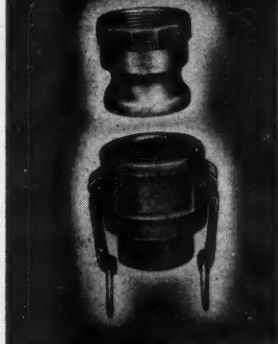
Warren Petroleum Plans Purchase of Hanlon-Buchanan

Negotiations were under way in early May involving the purchase of Hanlon-Buchanan, Inc., and associated interests by Warren Petroleum Corp. Both organizations have their headquarters in Tulsa and for years have been large independent manufacturers and distributors of natural gasoline and allied products.

The following Hanlon companies are reported to be included in the proposed purchase by the Warren company: Henaghan and Hanlon, Inc., Hanlon-Buchanan, Inc., Smith Brothers Refining Co., Hanlon Pipe Line Co., Hanlon-Boyle, Inc., Hanlon Gasoline Co., and Hanlon Gasoline Corp. of Texas.

The Warren Petroleum Corp. was started in 1922 by William K. Warren.

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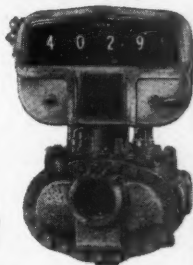
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